

NEW YORK ZOOLOGICAL SOCIETY

ANNUAL REPORT

1905



THIS IS THE SIXTIETH
ANNUAL REPORT OF THE
NEW YORK ZOOLOGICAL
SOCIETY - - - - 1955

THE SOCIETY'S OFFICES
30 EAST 40TH STREET, NEW YORK 16

THE ZOOLOGICAL PARK
BRONX PARK, NEW YORK 60



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REPORT OF THE PRESIDENT

FAIRFIELD OSBORN, *President*

THE YEAR HAS BEEN a satisfactory one, with no setbacks of importance and a good record of accomplishment in the various fields of the Society's interests. It is true that abnormal weather, marked by extreme heat in the early summer and unusually heavy rains in August and during the early autumn, diminished attendance at the Zoological Park. Balancing this, we were cheered by the fact that construction of the first stage of the new Aquarium was under way and that in due course the Society will be extending its service to the public through this new institution.

There has been a high level of accomplishment in scientific research and, concurrently, effective activity in wildlife protection and in conservation not only by the Society itself but through its affiliate, The Conservation Foundation. The latter organization had a particularly productive year. Those wishing to obtain a copy of the Foundation's last annual report may do so by writing to the Society's office at 30 East 40th Street, New York 16.

In regard to finances, costs of operation were met with a balance of \$5,307.53 of income over expenditures. However, the trend towards higher costs of operations continues unchecked and it is quite evident that this will be the last year in which expenses can be met with available income unless substantial additions to the Society's capital funds can be acquired. The principal reason for higher future costs is the fact that during the year the City of New York virtually completed its plans for the adoption of the so-called Career and Salary Plan. This program will prove of distinct benefit to those of our employees in the Zoological Park whose salaries are provided by the City. Forty per cent. of our employees are paid wholly out of the funds of the Society itself and in order to be fair to our own directly-paid employees we shall need to match the higher rates about to be established by the City. At the same time new and more equitable rates for our administrative and curatorial staff will be adopted as of January 1, 1956. While these changes are extremely desirable, it must be recognized that they will result in recurrent higher expenditures amounting to not less than \$25,000 per year. As in the case of all similar institutions, other costs of operations have been slowly but steadily increasing. The consequence of all this is that the Society needs to build up its endowment funds at this time by at least one million dollars if it is to avoid recurrent deficits.

Gifts, grants and legacies received during the year aggregated \$208,500. A considerable part of this amount, namely \$94,000, was received through a legacy from the Edward P. Casey Estate. However, this new fund is restricted in that the principal is not to be expended and the income is to be used for the acquisition of animal collections either at the Zoological Park or the new Aquarium.

The financing necessary for the completion of the first stage of the new Aquarium is well in hand, contributions to December 31, 1955, totalling \$577,800. Of this amount, \$131,770 remained on hand and will be used to meet the various expenses of preparing the building for opening to the public. There have been delays in construction and it seems probable that it will not be possible to open this new institution until the Spring of 1957.

During the year the Society suffered the loss through death of two members of the Board of Trustees: Mr. Archer M. Huntington and Mr. Harry Payne Bingham. The resignation from the Board of Mr. Archibald B. Roosevelt was regretfully accepted. Mr. Richard C. Patterson, Jr., and Mr. Henry Sears were welcomed to membership on the Board.

The entire organization again scored a fine year of hard and productive work. Proof of this observation will be found in the ensuing departmental reports.

THE ZOOLOGICAL PARK

JOHN TEE-VAN, *Director*

THE ZOOLOGICAL PARK's continuing desire to display the rare animals of the world is indulged some years more than others, and 1955, as it happened, was better than average in this respect. It brought us, for example, a pair of large, fat and healthy Komodo Monitors or "dragon lizards" as the star attractions of our Reptile House. In June we received two Emperor Penguins, the first we had ever exhibited, and they settled quickly and peacefully into the life of our Penguin House. A young Roosevelt Elk from California, first of this subspecies we have shown, is now to be seen in the woods east of the Primate House. Cheetahs, the great tame cats that are occasionally used for hunting, are in the Lion House where they strenuously play with their keeper; Steller's Sea Lions are to be seen in the Sea Lion Pool; there is a new, young African Black Rhinoceros in the Elephant House. Add to these the many interesting and attractive birds and reptiles that came into the collection with less fanfare, and it appears that the past year was quite satisfactory as far as the animal departments are concerned.

It is gratifying to report, too, that some of our greatest and most delicate rarities are continuing to stretch out their years with us. The two Duck-billed Platypuses completed eight years in the Zoological Park in April of 1955, and our two Congo Peacocks rounded out six years of exhibition last June.

It is natural and desirable that the physical appearance of the Zoological Park should change from year to year. A major change is being effected in the south section of the bear enclosures. Five compartments have been removed and in the next few months will be converted into three moated enclosures that will enable us to exhibit bears without unsightly bars. The massive ledges of granite at the rear of the present installations are both a help and a hindrance in working out new designs, and before we embarked on the job several members of the staff made a tour of other zoological gardens to see how they solved comparable problems.

New ornamental structures have been built in the outside yards of the Great Apes House, providing shade and opportunity to climb and play for the Gorillas, Chimpanzees and Orang-utans. The Rockefeller Fountain at the Concourse Circle has been rebuilt and cleaned and is now in excellent condition. The Primate House during the winter will receive a new roof and floor and we will have the oppor-

tunity to reconstruct the interior of the building for the exhibition of the smaller monkeys. The Wild Swine and Kangaroo House has been entirely repainted.

The Wild Fowl Pond was drained several times during the year, principally because of botulism, which caused the death of a number of birds. Plans have been drawn for the renovation of this pond, reducing its size slightly and deepening the water. It is thought that increasing the depth will eliminate the possibility of poisoning by botulinus.

The City's Career and Salary Plan for employees paid by the Society and for which we receive reimbursement from the City, started to function during the year. Increases have materialized for a considerable number of employees and it is hoped that by the middle of next year all employees will be provided for.

The Zoological Park Council functioned exceedingly well during the year and we hope will continue its efforts in connection with employees of the Zoological Society. The Safety Committee has operated well and its suggestions have contributed greatly to the safe operation of the Zoological Park in regard to both employees and the public.

The Society's policy of encouraging staff officers to attend conferences and symposia in various parts of the country has been of great value, as will be seen in the reports of the different departments. Conversely, the number of institutions coming to us for information in connection with their own zoological parks or aquariums continues large. Dr. Goss attended a Zoological Park and Aquarium Workshop at Michigan State College, toward which the Zoological Society contributed funds, from which came an excellent publication, "A Zoological Park—Why, Where, How."

Visits to the Zoological Park by various organizations—The Century Association, The University Club, the Coffee House and the like—have become annual affairs. Other visitors of distinction included Prince Rainier of Monaco, 19 scientists who attended the Princeton Meeting of the Wenner-Gren Foundation on "Man's Role in Changing the Face of the Earth" and groups of officers and Allied National Students from Fort Monmouth.

Dr. Richard H. Manville, formerly Associate Professor of Michigan State College, came to the Zoological Park as Curator of Mammals on September 15, replacing Robert M. McClung who resigned in February. Dr. Manville is an ably-trained mammalogist and we look forward with pleasure to his future with the Zoological Park.

The "war" against litter continues with vehemence. Signs have been placed about the Park calling attention to litter baskets and concrete burners which are provided everywhere. It was hoped that the public

would act with reasonableness, but the results are the same—tons of refuse picked up after each week-end.

The New York, New Haven and Hartford Railroad's special Zoo Trains, 17 in number and carrying well over 17,000 individuals, came from various parts of New England direct to the Zoo. Personnel from the Park made radio and television appearances to promote the trains and accompanied some of the runs with animals. The Zoo Trains arrive at Van Nest Station about a mile from the Park and passengers are brought here in buses.

Dr. Helmut K. Buechner is engaged on a project relating to the ecology and general relationships of the Bighorn Sheep, which is being supported jointly by the Society and the Conservation Foundation. His report, which will be completed in 1956, should give a clearer understanding of these animals and their chances for survival.

Dr. Carl Koford is making a study of the lesser fauna of the western plains and is primarily concerned with the Prairie Dog and its related fauna and flora. The grant under which this work is being done is a joint one of the Society and the Conservation Foundation.

We are deeply grateful to our Photographic Consultant, Henry M. Lester, for his services in obtaining an excellent color motion picture of a rattlesnake striking (2,400-2,500 frames a second). This adds greatly to our knowledge of how these creatures strike and what their actions are.

Attendance during 1955 was 2,114,961—a reduction. The drop is a result of bad weather on week-ends and inadequate parking facilities. We can park 1,740 cars at one time but this is not sufficient on crowded week-ends.

SUMMARY OF ATTENDANCE

ZOOLOGICAL PARK

<i>Month</i>	1955	1954
January	49,098	40,251
February	66,240	130,516
March	104,371	111,241
April	229,400	249,643
May	364,957	357,291
June	245,215	272,441
July	283,083	320,747
August	248,236	310,401
September	234,814	218,532
October	160,225	216,694
November	97,841	103,142
December	31,481	49,834
	<hr/> 2,114,961	<hr/> 2,380,733

Total visitors from November 9, 1899,
to December 31, 1955 121,194,529

DEPARTMENT OF MAMMALS

RICHARD H. MANVILLE, *Curator* (from September 15)

ROBERT M. MCCLUNG, *Curator* (January 1 to February 14)

GRACE DAVALL, *Assistant Curator*

AUGUST SCHILLING, *Head Keeper*

LEE S. CRANDALL, *General Curator Emeritus*

VIRTUALLY THE WHOLE of 1955 was a period of transition in the Department of Mammals. Robert M. McClung, associated with the Zoological Park since 1948, resigned the Curatorship on February 14 and Assistant Director Leonard J. Goss took over management of the mammal collection. Necessarily much of the work fell on the shoulders of Assistant Curator Grace Davall, already carrying the load of the Department of Birds, responsibility for the Children's Zoo and custodianship of various record-keeping jobs. It is a considerable tribute to her efficiency and sheer hard work that the affairs of the department were up to the minute and running smoothly when Richard H. Manville assumed the Curatorship on September 15.

In the number of species and specimens exhibited, the collection remained at nearly the 1954 level. By birth, purchase, gift or exchange we acquired 152 specimens; 165 died or were otherwise disposed of during the year.

An interesting new species added to the collection was the Giant Otter (*Pteronura brasiliensis*). This beautiful creature from the upper Amazon basin is young and quite tame; when fully grown it may reach seven feet in length. Enlarged quarters for it are being prepared in the Small Mammal House. Other noteworthy additions included two Callimicos, or Goeldi's Marmosets (*Callimico goeldi*); a pair of Ring-tailed Lemurs (*Lemur catta*) from Madagascar, our first since 1948; two Red Uakari Monkeys (*Cacajao rubicundus*), formerly here for only a few weeks in 1924; and two young, hand-reared Cheetahs (*Acinonyx jubatus*), last seen here in 1940. Not since 1905 have we exhibited Steller's Sea Lions (*Eumetopias jubata*); two young ones, less than a year old, were procured from the Stanley Park Zoo in Vancouver. Dr. Oshin Agathon donated a Glacier Bear cub (*Ursus americanus emmonsi*) from Yakutat Bay, Alaska. Trustee DeForest Grant presented us with a young Roosevelt Elk (*Cervus canadensis roosevelti*) from California, where a few specimens of this magnificent form still persist. Mr. Bronson M. Potter not only helped to capture and transport, but gave us, a young Onager or Wild Ass (*Equus*

hemionus onager), a dwindling Persian race only once before in our collection, from 1920 to 1937.

We purchased a young male Black Rhinoceros (*Rhinoceros bicornis*), captured near Arusha, Tanganyika. It weighed 1,240 pounds on arrival.

Of the 99 births throughout the year, the first was that of a Nyala on January 2, the last the arrival on December 30 of nine Dingo pups, two of which survive. An Angola Colobus Monkey was the second born in captivity (the first was also born here, in 1954); a fifth member joined our family of Guinea Baboons; a sixth youngster was born to our White-handed Gibbons, here since 1942; and our Congo Pottos also had their sixth infant, but again failed to care for it. The baby was put in the charge of Nurse Mary Murphy Henriques, who reared it successfully. Other births increased our stocks of Black Bear, Agile Wallaby, Slow Loris, Red Fox, Patagonian Cavy, Gayal, Arabian Gazelle, Muntjac, Llama, Addax, Blackbuck, Eland, Blue Duiker, Himalayan Tahr, Chinese Water Deer, Axis and Sika Deer, American Elk and other hoofed stock.

Important losses during this period included our two American Moose, a Malay Tapir and our only Mountain Tapir, both of our Lesser Pandas, and our only Sunbear. Our first Callimico expired, and because of the rarity of this species, the specimen was sent to Prof. W. C. Osman Hill of the Zoological Society of London for anatomical studies. A Malay Sambar Deer, received as an adult in 1929, lived for 26 years, 5 months and 6 days. A European Hedgehog was with us for 3 years, 11 months and 8 days. Our Snow Leopard spent 8 years, 8 months and 14 days in the Park. These last two are believed to represent longevity records for the species in captivity.

A number of animals were involved in sales or exchanges with other institutions. Of the 1954 progeny of "Dacca" and "Rajpur," our Bengal Tigers, one went to the Taronga Park Zoo in Sydney, one to a private zoo in Brussels, and one to the Seneca Park Zoo in Rochester, N. Y. Two Jaguar cubs were sent to the Zoological Park in Amsterdam.

Our Duck-billed Platypuses, "Penelope" and "Cecil," were in their outdoor exhibition quarters from May 7 to October 29. They continued in good health as they entered their ninth year in the Zoo. Our Black-faced Chimpanzee, "Jimmy," established a record weight for the species in captivity when, at the age of 22 years, he tipped the scales at 190 pounds. A Zebra colt, a Grant's \times Chapman's hybrid, was acquired. It adds liveliness to the scene on the African Plains.

We have been repeatedly alarmed by reports of a pack of stray dogs within the Zoo. One exhibition animal was killed by them and the threat of further damage remains. Another problem confronting us is the lack of good drainage of the area including Goat Hill and

the African Plains Annex; standing water and muddy areas are unhealthy for the hoofed stock quartered there.

The interior of the Kangaroo House was repainted. Exhibits in both the Small Mammal and Kangaroo Houses were enhanced by new, printed, plastic labels. Hydraulic sliding doors add much to the efficiency of operation in the African Black Rhinoceros stall of the Elephant House. The five most southerly Bear Dens were dismantled in preparation for the construction of modern, barless, moated enclosures for these animals on the same site. A new tank for our Giant Otter is expected to be started soon. In the planning stage are renovations of the floors, roofs and exhibits in the Primate and Lion Houses.

Mr. Crandall, Miss Davall and Dr. Manville each spoke before the In-Service Teachers' Course given at the Zoo. Early in the year, Dr. Goss and Dr. Manville participated in a workshop at East Lansing, Mich., under the joint sponsorship of Michigan State University and the American Institute of Park Executives. Dr. Manville accompanied the Director and others of the staff on an inspection tour of the St. Louis Zoological Park, the Brookfield Zoo at Chicago and the Detroit Zoological Park, paying especial attention to the construction of bear dens.

Advice on sundry topics was extended by telephone or by mail—a routine function of the department—and personal consultations were held with Dr. Arthur Lacallio of the Berg Institute and with Dr. Benjamin Lieberwitz of the University of California.

General Curator Emeritus Crandall continued work on the manuscript of his book on the care of animals in captivity. Reports of research on vertebrates previously conducted in Michigan, Montana and Virginia are being organized by Dr. Manville. Data are being assembled for a comprehensive catalog of the mammals in the Zoological Society's collection since 1899. Investigations are being considered in the field of nocturnal mammals and ways to more effectively maintain and exhibit them in captivity.

Publications by the department, exclusive of those in the Society's journals, were:

MISS DAVALL

Zoologist, *Par Excellence*. [Lee S. Crandall]. Zoonooz, Vol. 28, No. 3, pp. 12-14. March, 1955.

DR. MANVILLE

Dichromatism in Michigan Rodents. Jour. Mamm., Vol. 36, No. 2, p. 293. May, 1955.

[Review of] List of North American Recent Mammals, by Gerrit S. Miller, Jr., and Remington Kellogg. Jack-Pine Warbler, Vol. 33, No. 2, pp. 70-71. June, 1955.

Report of Deer Attacking Cougar. Jour. Mamm., Vol. 36, No. 3, pp. 476-478. August, 1955.

The Snakes of Michigan. Extension Bulletin No. 315, Michigan State University, pp. 1-20. Revised November, 1955.

CENSUS OF MAMMALS

December 31, 1955

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
MONOTREMATA	Echidnas, Platypuses	1	2
MARSUPIALIA	Kangaroos, Phalangers, Opossums, etc.	11	23
INSECTIVORA	Moles, Shrews, Hedgehogs, etc. . . .	1	1
CARNIVORA	Bears, Raccoons, Cats, Dogs, Otters, etc.	36	85
PINNIPEDIA	Seals, Sea Lions, Walruses	4	8
RODENTIA	Squirrels, Beavers, Mice, Porcu- pines, etc.	12	22
PRIMATES	Apes, Monkeys, Lemurs, Marmo- sets, etc.	50	95
XENARTHRA	Armadillos, Sloths, Anteaters	2	2
PROBOSCIDEA	Elephants	3	5
ARTIODACTYLA	Cattle, Sheep, Antelopes, Camels, Giraffes, Deer, Swine, Hippo- potamuses	57	288
PERISSODACTYLA	Horses, Tapirs, Rhinoceroses	9	12
	TOTALS	186	543

Summary: Orders, 11; Species, 186; Specimens, 543.

DEPARTMENT OF BIRDS

ROBERT M. McCLUNG, *Curator* (January 1 to February 14)

GRACE DAVALL, *Assistant Curator*

GEORGE SCOTT, *Head Keeper*

LEE S. CRANDALL, *General Curator Emeritus*

DESPITE THE FACT that no large or outstanding collections of birds were received in 1955, the department ended the year with the largest number of species since 1948. Likewise, the number of specimens on hand at census time exceeded all other totals for the past eight years. This gratifying state of affairs came about as a result of careful selections from dealers' lists as well as some small but important gifts and exchanges. Accessions totalled 353 specimens, including 26 forms new to us. Several replacements of species we had not exhibited for several years were unusually interesting, notably an Inca tern, last exhibited in 1925, a Yellow-breasted Fruit Pigeon which we had not had since 1923 and two American Golden-eyes not represented since 1911. The birds never previously seen in the Zoological Park were:

Emperor Penguin—*Aptenodytes forsteri* G. R. Gray

Cape Teal—*Anas capensis* Gmelin

Puna Teal—*Anas versicolor puna* Tschudi

Northern Eider Duck—*Somateria mollissima borealis* (Brehm)

Harlequin Quail—*Coturnix delegorguei delegorguei* Delegorgue

Florida Sandhill Crane—*Grus canadensis pratensis* Meyer

Eastern Brown-headed Touraco—*Crinifer africanus zonurus* (Rüppell)

Jamaican Mango—*Anthracothonax mango* (Linnaeus)

Red-billed Streamer-tail—*Trochilus polytmus polytmus* Linnaeus

Bahama Wood-star—*Philodice evelynae evelynae* (Bourcier)

Vervain Hummingbird—*Mellisuga minima minima* (Linnaeus)

Ecuadorian Blue-breasted Toucan—*Andigena nigrirostris spilorhynchus* Gould

Yellow-throated Woodpecker—*Melanerpes formicivorus flavigula* (Malherbe)

Little Scaly-bellied Woodpecker—*Picus xanthopygaeus* (Gray & Gray)

Pega Jay—*Uroleuca cristatella* (Temminck)

Azara's Robin—*Turdus leucomelas leucomelas* Vieillot

Brown Willow-warbler—*Phylloscopus collybitus tristis* Blyth

Emerald Glossy Starling—*Coccycolius iris* Oustalet

Pemba Island Sunbird—*Cinnyris bifasciatus pembae* Reichenow

Kenya Buff-breasted Sunbird—*Cinnyris venustus falkensteini* Fischer & Reichenow

West African Buff-breasted Sunbird—*Cinnyris venustus venustus* (Shaw & Nodder)

Sierra Leone Olive-bellied Sunbird—*Cinnyris chloropygius kemp* Ogilvie-Grant

Mombasa Amethyst Sunbird—*Chalcomitra amethystina kalckreuthi* (Cabanis)

Kenya Yellow White-eye—*Zosterops senegalensis flavilateralis* Reichenow

Jamaican Banana-quit—*Coereba flaveola flaveola* (Linnaeus)
Oregon Towhee—*Pipilo maculatus oregonus* Bell

The Emperor Penguin takes first place not only in systematic arrangement of species but as one of the most welcome and desirable acquisitions in the history of the department. Of particular beauty is the Ecuadorian Blue-breasted Toucan, notable for the lovely soft blue that is so unusual in this group. The four species of humming-birds and the Jamaican Banana-quit were obtained for us by Oliver Griswold, of the University of Miami, on a collecting trip to the West Indies, while the sunbirds were obtained through the efforts of Reginald Bloom and John Seago who are collecting in East Africa.

Exchanges with other zoological parks brought us a fine collection of eight species of native waterfowl from the San Antonio Zoological Society; two each of American Egrets, Reddish Egrets and Roseate Spoonbills from the Fort Worth Zoo; two Sierra Leone Olive-bellied Sunbirds, a West African Buff-breasted Sunbird and an Emerald Glossy Starling from the Zoological Society of London, also an interesting lot of twenty-eight sparrows, towhees and juncos, of five species, from the Washington Park Zoo in Portland, Ore. Reciprocal shipments were made to some of these institutions, while open accounts have been requested by others, pending their need at a later date for species which we may be able to supply. The two Emperor Penguins received in April were obtained through the cooperation of the National Zoological Park and the United States Navy.

At the request of the Jardin Zoologico in Concepcion, Chile, we sent them two Northern Blue Jays, two Eastern Red-wings, two Eastern Robins and two Purple Grackles, species common enough here but of great interest in other countries. We were also pleased to be able to share with the Chicago Zoological Park surplus specimens of two species they did not have in their collection—a Guilding's Amazon and a European Avocet.

In July, a large shipment of native western birds was received and conditioned here, then forwarded to Cornell University for use in an important series of hybridization experiments to be conducted by Prof. C. L. Sibley of the Department of Ornithology. As a gesture of appreciation, Prof. Sibley presented us with four very fine Blue-fronted Jays.

Situated as we are in a position fairly near Idlewild Airport, the terminal through which air shipments pass both going out of and coming into this country, we were called upon on several occasions to inspect and service shipments of birds enroute to zoos here and abroad.

Our Black-foot Penguins, the only established breeding colony of these birds in this country, gave further evidence of their continued

well-being by hatching off two more chicks in November. These and many other penguins successfully reared since 1942 represent the offspring of "Annie," a male Black-foot received in 1941, when the Aquarium moved from the Battery to the Zoo. Other successful hatchings include three Mute Swans, four Wood Ducks, seven Barbary Turtle Doves, six Indian peafowl and a hybrid Nankeen \times Black-crowned Night Heron. The latter success climaxed six years of unproductive courtship and nest-building by these two herons.

On June 24 one of our King Penguins laid an egg and hopes were high that we would be successful in achieving another breeding record. The egg was faithfully incubated by one of the parents but whether the male or the female, we could not determine; neither did close observation reveal that the egg ever was transferred from one parent to the other. After fifty-five days, when no chick appeared, the egg was removed and found to have been cracked. Apparently this had occurred soon after it was laid and the contents were so shrivelled and dried that it was difficult to determine whether or not the egg had been fertile.

Two young South African Ostriches were purchased for the African Plains but were retained in one of the Ostrich House corrals until they attained a size that would insure their survival in that exhibit. Their development was rapid and they are now ready for their introduction to the African Plains in the spring of 1956.

Losses were, of course, inevitable, but fortunately they were neither too numerous nor did they represent many accidental or avoidable incidents. The unexpected death of our beautiful male Ribbon-tailed Bird of Paradise was most keenly felt, especially as the bird was in such apparently perfect condition, moreover because he was the only representative of the species in captivity outside Australia and New Guinea. For the first time since he was brought from New Guinea by Head Keeper George Scott in 1953, he had developed his two long, black-tipped tail feathers to their full length of 33 inches. Two longevity records were established. A Ruppell's Vulture lived in the Zoological Park for 30 years, 1 month and 18 days, and a Sun Bittern had been here for 24 years and 6 months when it died on March 2.

Botulism took a heavy toll of Black Ducks and Mallards, especially during a late outbreak in October, which necessitated the removal of all of our pinioned waterfowl from the Wild Fowl Pond to another enclosure. Plans for the reconstruction of this attractive pond will be activated during the coming spring and it is hoped that the elimination of botulinus there will be accomplished.

There were no major building changes or improvements during 1955. However, new entrance and vestibule doors were installed in the Large Bird House, improving both appearance and operation of

that building. Also, plastic labels were prepared and placed in new illuminated holders in the Penguin House. Illustrated with colored drawings by Staff Artist Lloyd Sandford, these labels greatly enhance the appearance of the Penguin House and point up the fact that the exhibit now contains fourteen specimens of seven species—a series not duplicated anywhere in this country.

After almost thirteen years of loyal and valued service in the Bird Department, Keeper Ernest Smith resigned to undertake a business venture in Baltimore.

The Bird Fanciers' Association held its Twelfth Annual Show in the Heads and Horns Museum in October. As a token of appreciation for the use of our facilities, the Park was presented with a Yellow-faced Gouldian Finch, the first example of this color variant of the species that we have ever exhibited.

CENSUS OF BIRDS

December 31, 1955

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
STRUTHIONIFORMES	Ostriches	1	3
RHEIFORMES	Rheas	2	3
CASUARIIFORMES	Cassowaries and Emus	2	3
TINAMIFORMES	Tinamous	1	1
SPHENISCIFORMES	Penguins	8	24
PELECANIFORMES	Pelicans, Cormorants, etc.	8	15
CICONIIFORMES	Herons, Ibises, Storks, Flamingos, etc.	30	60
ANSERIFORMES	Swans, Ducks, Geese and Screamers..	62	381
FALCONIFORMES	Vultures, Hawks and Eagles	24	28
GALLIFORMES	Quail, Pheasants, etc.	46	116
GRUIFORMES	Hemipodes, Cranes, Trumpeters, Rails, etc.	21	41
CHARADRIIFORMES	Plovers, Sandpipers, Gulls, etc.	15	38
COLUMBIFORMES	Pigeons, Doves and Sandgrouse	29	94
PSITTACIFORMES	Parrots, etc.	27	43
CUCULIFORMES	Touracos and Cuckoos	6	7
STRIGIFORMES	Owls	9	17
CAPRIMULGIFORMES	Frogmouths	1	2
APODIFORMES	Hummingbirds	8	14
TROGONIFORMES	Trogons and Quetzals	1	4
CORACIFORMES	Kingfishers, Hornbills, etc.	8	10
PICIFORMES	Barbets, Toucans and Woodpeckers ..	26	38
PASSERIFORMES	Perching Birds	237	515
TOTALS		572	1,457

Summary: Orders, 22; Species, 572; Specimens, 1,457.

DEPARTMENT OF REPTILES

JAMES A. OLIVER, *Curator*

STEPHEN SPENCOOK, *Head Keeper*

THE REPTILE DEPARTMENT in 1955 received an unusual number of notable rarities, achieved considerable success in keeping several species and accomplished important strides in our educational activities. We continued our efforts to build up the collection to the maximum carrying capacity of the new building. The success of these efforts is indicated by the fact that at the end of the year we had the largest collection of amphibians and reptiles in the history of the Zoological Park, a total of 234 species and subspecies. As far as we can ascertain, this is the largest and most diverse collection of reptiles and amphibians in any zoological garden in the world today in number of named forms. Our previous high was 197 species and subspecies in 1909. It is interesting to note that between 1915 and 1950 the collection never numbered as many as 150 named forms. We believe the present Reptile House can comfortably house a permanent collection of about 200 forms and are consolidating the collection around this figure.

One of the most exciting occurrences of the year was the mating of our King Cobras. This species is unique among snakes because the female builds a large nest of leaves and sticks. The courtship, mating and nest building had never been observed and young of this species had never been reared in captivity. On March 10, 1955, the courtship and mating were observed by the Curator and several keepers. On April 21 the female began building her nest and in three days had made a mound of bamboo and magnolia leaves about 18 inches high and approximately three feet in maximum diameter. On April 24 she deposited 41 eggs in the nest chamber. Eleven of these eggs were not viable, but between July 4 and 12 nine healthy young King Cobras emerged from the remaining eggs—the first to be bred and hatched in captivity. Unfortunately we were not successful in rearing these young, but hope to have better luck in 1956.

The list of outstanding rarities was headed by a splendid pair of Komodo Monitors received from the Surabaya Zoo. These animals, the largest living lizards, arrived in May and have become well adjusted to their new home. The male is nine feet in length and weighs more than 200 pounds. The female is nearly the same length, but is a much lighter animal, weighing just half of the male's weight. These are the only living specimens of this lizard on exhibition outside Indonesia.

When Dr. Beebe and Miss Crane were in Singapore last summer, they gathered an interesting collection of so-called "flying" reptiles and sent them to us. They included three species of delicate gliding lizards (*Draco*), forms with an expandable flap of skin on each side of the body enabling them to glide like our native Flying Squirrel. Also included were two individuals of the Ornate Tree Snake (*Chrysopelea ornata*), a close relative of the Twin-barred Tree Snake mentioned in the last Annual Report of this Department.

From Australia we received two specimens of the Frilled Lizard (*Chlamydosaurus kingi*), an unusual and, at times, awesome looking reptile. This rare lizard has a large, umbrella-like fold of skin surrounding the neck and supported by bony extensions from the throat. When it becomes excited it opens its mouth and raises its frill, causing it to appear large and formidable. Without the frill raised, it looks much like any other lizard. Another notable rarity exhibited during the year and of interest because of a peculiar structural feature was the Madagascan Leaf-nosed Snake (*Langaha intermedia*). This snake bears a large, leaf-like projection on the end of its nose, giving the head a most striking appearance. *Langaha*, one of the really rare snakes of the world, was donated by Peter Beard on his return from a brief trip to Madagascar.

While most of our more notable exhibits were reptiles, frogs also were in the news. During the summer we obtained a large, but unfortunately badly damaged, specimen of the African Giant Frog (*Rana goliath*)—the largest living frog. Our specimen was the second one to be exhibited alive in this country. Because of its large size, it attracted considerable interest. It measured 11½ inches from the tip of its nose to the end of its body and 28 inches from the head to the tip of its outstretched toes. This rare frog is found in a small area in Western Africa and is difficult to collect. Because of its injuries our specimen lived only a few days. Another amphibian of note exhibited during the year—and the antithesis of the Giant Frog in size—was Darwin's Frog (*Rhinoderma darwini*). Several of these odd, diminutive frogs were sent to us as exchange material by the Concepcion Zoo in Chile. Perhaps the most unusual feature of this frog is its method of reproduction, for the male carries the developing eggs and tadpoles in its vocal pouch in the mouth.

Dr. Oliver continued work with Staff Photographer Sam Dunton on the educational film, "The Defenses of Reptiles." A considerable amount of time and effort was spent with Photographic Consultant Henry Lester, Mr. Dunton and Head Keeper Stephen Spencook in getting a good high speed motion picture recording in color of a rattlesnake strike. This sequence was desired for inclusion in "The Defenses of Reptiles." It is worthy of record that more than twenty

characteristically irascible Western Diamondback Rattlesnakes (*Crotalus atrox*) were "interviewed" before we found one that would strike more or less on cue. This was "Herman, the toughest Texan of them all." Herman was one of several Rattlers donated to the Zoo by Otto Martin Locke of New Braunfels, Texas.

We received a total of 598 specimens during the year. Most of these (324) came as gifts, while purchases resulted in the addition of 212 specimens and exchanges brought another 62 individuals. At the same time we sent out 88 specimens on exchange, made gifts of 20 individuals and sold 5 animals. The following institutions and individuals participated in exchanges and donations of specimens: The American Museum of Natural History, the Aquarium of the New York Zoological Society and the Staten Island Zoo, New York City; Trailside Museum, Bear Mountain, N. Y.; Zoological Society of San Diego; Lincoln Park Zoo, Chicago; National Zoological Park, Washington; Philadelphia Zoological Garden; Municipal Zoo, Columbus, O.; El Paso Reptile Garden; Otto Martin Locke, New Braunfels, Texas; Museum of Comparative Zoology, Harvard College, Cambridge, Mass.; Florida State Museum, Gainesville; the United Fruit Company, Weehawken, N. J.; the Surabaja Zoo, Indonesia; the Maribor Aquarium, Yugoslavia; J. H. Geuns, Sumatra; John Lednický of Manila, Philippines; the Jardin Zoologico, Concepcion, Chile; the London Zoological Garden; Cologne Zoological Gardens; Dr. M. Popp, Dessau, Germany; the Ueno Zoo, Tokyo.

In addition to the outstanding rarities already mentioned, two Orinoco Turtles (*Podocnemis expansa*), a large, attractive Israeli Soft-shelled Turtle (*Trionyx euphratica*) and two small African Soft-shelled Tortoises (*Malacochersus tornieri*) should be mentioned. A large number of interesting snakes, lizards and crocodiles from India were received as gifts from Saul Blickman, Founder in Perpetuity of the New York Zoological Society. These included such rarities as Trinket Snakes (*Elaphe helena*), Wolf Snakes (*Lycodon aulicus*), Russell's Sand Boa (*Eryx conicus*) and Indian Gamma Snakes (*Boiga trigonata*). H. J. Phillips of Asuncion, Paraguay, sent us a beautiful and rare South American Coral Snake (*Micrurus frontalis*), a handsome and vicious South American Blotched Racer (*Dryadophis bifossatus*) and two interesting False Coral Snakes (*Oxyrhopus trigeminus*).

Much of the year's efforts have been spent in improving our house-keeping procedures and in getting the different species acclimated to captivity. Attesting to progress in these efforts is the increase in breeding activity and rearing of young. In addition to the King Cobras, our old female Asiatic Cobra bred for the first time in seven years. Thirteen little cobras resulted and four are now being reared by us, while the remainder were sent to three other zoos for rearing. Young African

Puff Adders, young Indian Rock Pythons and the young of several species of Rattlesnakes are being reared at the present time.

Research activities centered around the recording of observations on reproduction, growth, longevity and behavior of reptiles. The breeding of our King Cobras provided an opportunity of recording detailed data on this practically unknown phase of the life history of the species. Controlled experiments were instituted on several aspects of the biology of turtles. A number of cooperative research projects were continued and research material was provided for individuals working in other departments of the Zoological Park or in other institutions, including The American Museum of Natural History, Columbia University and New York University.

The Curator, Dr. Oliver, spoke to the following groups during the year:

Boonton, New Jersey, Rotary Club
Sawmill River Audubon Society, Chappaqua, New York
Children of Members Program, The American Museum of Natural History
Lions Club, Jamaica, New York
Zoological Park, In-Service Teachers' Course

The Reptile Club, started in September, 1954, continues to grow and enjoy an active program under the sponsorship of the Society and the guidance of the Curator of Reptiles. The original membership has now approximately doubled. Officers were elected and now direct the activities of the group along more formal lines.

In October, Dr. Oliver's book, "The Natural History of North American Amphibians and Reptiles," was published by D. Van Nostrand Company of Princeton, N. J. This is a semipopular work on the ways of our native amphibians and reptiles. It is intended for the interested amateur naturalist and beginning student of herpetology.

During the year the following reptiles were featured in three articles in Life Magazine: Frilled Lizard, "Flying" Lizards (*Draco*) and Komodo Monitors.

The Curator published an article on snakes in the "Yearbook of the American Peoples Encyclopedia" and in *Natural History Magazine* an article called "The Mongoose Doesn't Always Win." The latter article was reprinted in Science Digest.

Dr. Oliver wrote the following articles for *Animal Kingdom*:

"Gecko—The Chirping Reptile"—Vol. 58, No. 1.

"Big Bluff from Australia"—Vol. 58, No. 2.

"Banana Bonanza"—Vol. 58, No. 3.

CENSUS OF REPTILES AND AMPHIBIANS

December 31, 1955

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
AMPHIBIA			
CAUDATA	Salamanders	9	13
SALIENTIA	Frogs and Toads.....	19	44
REPTILIA			
CROCODILIA	Alligators and Crocodiles.....	9	78
SERPENTES	Snakes	106	159
SAURIA	Lizards	29	47
CHELONIA	Turtles and Tortoises.....	62	126
	TOTALS	234	653*

Summary: Orders, 6; Species, 234; Specimens, 653.

*Including 186 research specimens.

COMBINED CENSUS

December 31, 1955

	<i>Species</i>	<i>Specimens</i>
Mammals	186	543
Birds	572	1,457
Reptiles and Amphibians	234	653
Totals	992	2,653

ANIMAL HOSPITAL

LEONARD J. GOSS, *Assistant Director & Veterinarian*

CHARLES P. GANDAL, *Assistant Veterinarian*

THE ANIMAL HOSPITAL had cause for about equal satisfaction and regret in 1955—satisfaction with therapeutic measures that kept losses in certain areas at a minimum, with the results of some experimental work, and with success in rearing (for the first time, we believe) a Congo Potto; regret that we were unable to maintain in health two or three especially rare and valuable animals.

A detailed report on the hand-rearing of a Potto (*Perodicticus potto ibeanus*) is in preparation for publication, but it may be said here that the infant was born on February 24, weighed 40.2 grams, and was the only one to survive of six offspring of our pair of Congo Pottos since their arrival in 1949, all of them having been abandoned by the mother at birth. The infant was placed under the care of Mary Murphy Henriques, R.N., of the Hospital staff, and fed with the formula devised at Yale University for rearing Rhesus Monkeys. At the nurse's suggestion, the formula was subsequently modified, and by June 7 the young Potto was considered well started in life and was transferred to the Animal Nursery.

When two Emperor Penguins were acquired on April 29, routine throat cultures were made and although molds were found in the cultures, they were determined not to be *Aspergillus fumigatus*, the cause of aspergillosis, the fatal pulmonary mycotic infection so prevalent in penguins. The birds are being exhibited in our Penguin House where the temperature is controlled and the air filtered, and at the year's end they were thriving. Controlled experiments to determine the efficacy of the filters have not been made but it is noteworthy that since the filters have been used, no cases of mycotic disease have appeared among the birds in the exhibit. The Emperors, incidentally, weighed 52 and 63 pounds, respectively, on arrival, and 17 weeks after arrival they were recorded as 86 and 80 pounds, respectively. Each gets four pounds of mackerel a day. We have the feeling that food alone cannot account for their well-being, and that the climatic conditions of temperature and filtered air—as well as routine checking of throats, to prevent the introduction of an infected specimen—have much to do with it.

Still within the area of therapeutic measures to *prevent* disease is the project devised for the remaking of the Wildfowl Pond. Last year, as for many years, the summer months of hot and dry weather

were accompanied by outbreaks of botulism on the pond, and large numbers of dead and dying ducks and geese. While we cannot control the development of botulinus toxin in lakes and ponds and streams outside the Zoological Park, we have developed a scheme that should prevent future catastrophes within our own grounds. By narrowing and deepening the Wildfowl Pond, we expect to get rid of shallow, heated, stagnant water and give the birds clean running water at all times. Along the same lines, a second water inlet was installed in Heart Lake near the Zebra House, eliminating a static water area, and as a result there was no botulism this past summer and we successfully reared a pair of Mute Swan cygnets.

A pair of young Masai Giraffes received on October 13, 1954, was a potential source of trouble. Having been received so late in the year, they had to be confined indoors through the winter without benefit of natural, direct sunshine. A substitute for Vitamin D, so important in the development of straight-legged, rickets-free giraffes, was provided in the daily grain ration by means of irradiated yeast. To assure adequate amounts of calcium and phosphorus, steamed bone meal was fed daily in addition to the usual amount of ground limestone in the mixed grain ration. The animals are in magnificent health and are growing rapidly.

Dr. Gandal has completed his experiments on anesthesia in birds and a paper on the subject will appear shortly in the *Journal of the American Veterinary Medical Association*. It reports the successful adaptation to birds of an anesthetic designed for intravenous use in horses. Its use intramuscularly in wild birds of all species is a valuable contribution to the zoo veterinarian's armamentarium.

Dr. Goss and Dr. Oliver instituted a pilot experiment on immunization against snake bite. A certain degree of immunity was produced, but it was insufficient to afford complete protection. The work is being continued.

A new anthelmintic, one of the piperazine compounds, has been tried on various mammals and its effectiveness against certain nematodes has been encouraging. Advantages over other anthelmintics are its low toxicity to the host and relative tastelessness, which makes administration in the regular feed feasible. No pre- or post-treatment catharsis or period of withholding feed are necessary.

The mortality records at the close of this report indicate that losses were slightly increased. Certain of them are worthy of mention.

A Snow Leopard died of a hepatic neoplasm after 8 years and 8 months on exhibition.

A female Mountain Tapir died of a chronic pulmonary infection after 27 months in the collection. Our two previous specimens lived for 24½ months and 4½ months respectively. Keeping this species has

been a particular challenge. It appeared that this time we were going to be successful but suddenly, in November, under outdoor conditions, the animal began to fail and showed symptoms of enteritis and inappetance. Changes in diet were ineffectual and laboratory tests failed to reveal any specific enteric infection. Autopsy examination on December 20 disclosed a chronic pulmonary infection. Histopathological examination should reveal the exact etiological factor involved.

The male of the fine pair of Malay Tapirs died on March 29, eleven days following a resection of the bowel. A rectal prolapse, complicated with a prolapse of the colon, was surgically repaired. However, necropsy examination revealed the colon had ruptured, resulting in peritonitis.

It is interesting to note that in the same shipment from which we purchased our tapirs there was a second young male that also developed a rectal prolapse. Over a period of several months the condition recurred three times. Finally, in this case, Dr. Gandal was able to effect a successful surgical repair.

On October 1 a Lesser Panda died in convulsions, sixteen days following the administration of avianized canine distemper vaccine. This is the second such case. In neither was it possible to recover virus from the brain or to obtain histopathological evidence that distemper virus had been present.

The susceptibility of Lesser Pandas to canine distemper has not been established. It has been thought, however, that they might have that tendency, since closely related species are susceptible.

Our first specimen of *Callimico goeldii* was short lived, but nevertheless we were able to make the maximum scientific use of it. It was frozen and sent first to Dr. G. E. Erickson at the Harvard Medical School for anatomical studies. It was then sent to Dr. Osman Hill in London for additional anatomical studies. Subsequently, the pelt and skeleton were deposited at the American Museum of Natural History. Fortunately, later we were able to procure a pair of this species which is still in the collection.

In January the American Association of Zoological Parks and Aquariums in conjunction with Michigan State University conducted a workshop. The purpose was to prepare a brochure for agencies that might wish to develop and operate a zoological park. The Veterinarian represented the Society in this endeavor. Resulting from the workshop was a 48-page booklet "A Zoological Park—Why, Where, How" which has been accepted as a very worthwhile publication for the advancement of Zoological Parks.

Dr. Gandal has initiated study on the common neoplasms of psitta-

cine birds. This includes the surgical removal and pathological study of the neoplasms.

VISITORS AND CONSULTATIONS. During the year the newly appointed Veterinarians of the National Zoo and the San Diego Zoo spent several days observing our Veterinary Department procedures.

In August the Veterinarian attended the Convention of the American Veterinary Medical Association and in September the Convention of the American Association of Zoological Parks and Aquariums of which he was Vice-president and Chairman of the Program Committee.

Twenty-five postgraduate dental students from the New York University College of Dentistry made a tour of the Hospital and were given a talk on dental and research problems.

PUBLICATIONS, LECTURES, MEETINGS. On April 15 Dr. Goss addressed the Army Medical Service Graduate School, Washington, D. C., on "Veterinary Medicine and Public Health in Zoos." The Veterinarian addressed the combined Men's Clubs at the Zion Church in Wappingers Falls, New York; he also addressed the Katonah Rotary Club. The television show "Adventure" with Konrad Lorenz as the principal participant was done at the Farm-in-the-Zoo on January 23.

Dr. Gandal gave an illustrated talk to the Junior Professional Horsemen's Society of Westchester County in regard to the teeth of horses and zoo animals.

The CBS television show "Let's Take a Trip" did a behind the scenes show at the Hospital. The show, with Dr. Gandal as the principal, featured the specialized care, diets and treatments peculiar to zoo veterinary hospitals. In order to facilitate handling a monkey for the show with a splint on his arm he was given reserpine, one of the tranquilizing rauwolfia compounds. Research is being continued to evaluate this agent for use in other zoo animals. If successful, this drug would make possible daily treatment of excitable animals with a minimum of the dangers attendant to handling them.

COOPERATIVE RESEARCH was done with the following institutions:

New York Medical College, Department of Physiology.
New York University-Bellevue Medical Center, Department of Pediatrics.
Harvard Medical School, Department of Anatomy.
Mayo Clinic, Section of Bacteriology.
New York State Psychiatric Institute and College of Physicians and Surgeons,
Departments of Physiology and Neurology.
The Zoological Society of London.
Bronx Van Etten Hospital, Department of Pathology.
New York State Police Laboratory.
Lebanon Hospital, Department of Biochemistry.
Cornell University, Zoology Department.
Cornell University, Veterinary College.
University of California, Department of Physiology.

One hundred twenty-one specimens were dispatched to other research institutions with which we collaborated. An additional 30 specimens (25 birds and 5 mammals) went to the American Museum of Natural History.

STATISTICS. The Zoological Park's First Aid Service, which operates under the direction of the Hospital staff, handled 2,483 cases. Zoo employees furnished 16 pints of blood to the Red Cross Blood Bank, all being used as transfusions for six employees or members of their immediate families.

Birds hospitalized during the year numbered 173 for 1,332 days. Mammals hospitalized for the year numbered 173 for 5,431 days. Outpatient treatments numbered 194 mammals, 66 birds and 37 reptiles.

The mortality tables following require some explanation. "Total in Collection" is arrived at by adding to the census at the beginning of the year all animals acquired by purchase, exchange, gift or born alive. Animals disposed of alive by sale or exchange during the year are not deducted. Contrary to the policy of some zoological gardens, no acclimatization period following birth or arrival is allowed.

MORTALITY TABLE

MAMMALS

<i>Year</i>	<i>Total in Collection</i>	<i>Died</i>	<i>Mortality Percentage</i>
1955	716	131	18.30
1954	737	110	14.92
1953	733	115	15.68
1952	686	119	17.34
1951	691	104	15.05
Totals	3,563	579	
Average mortality for past 5 years			16.25
Average mortality for past 19 years			18.85

BIRDS

<i>Year</i>	<i>Total in Collection</i>	<i>Died</i>	<i>Mortality Percentage</i>
1955	1,830	316	19.50
1954	1,450	278	19.17
1953	1,728	271	15.68
1952	1,586	279	17.59
1951	1,617	250	15.46
Totals	8,211	1,394	
Average mortality for past 5 years			16.97
Average mortality for past 19 years			16.54

PUBLICATION AND PHOTOGRAPHY

WILLIAM BRIDGES, *Curator*

DOROTHY REVILLE, *Assistant*

SAM DUNTON, *Photographer*

PRODUCTION of descriptive labels about the animal exhibits has been a gnawing preoccupation of this department for more than twenty years. Several times we seemed on the verge of achieving a reasonably permanent yet inexpensive printed label—and always something happened. Paper shortages and deterioration of materials during World War II halted one promising experiment, fluctuations in quality of aluminum-coated cardboard a subsequent one. More recently we have pinned our hopes on a light-weight, cream-colored cardboard manufactured primarily for house sheathing. Labels printed on it were neat, clear and readable, but not weatherproof unless they were coated with clear varnish. And the varnish gave them a mottled appearance.

Early in the past year it was suggested that it might be possible to print directly on $\frac{1}{16}$ -inch-thick sheets of opaque Plexiglas. White, tan and green sheets were readily available and despite assurances by the makers of the plastic that direct printing by means of ordinary type was not possible, Oscar Larsen, in charge of the Zoological Park's Printshop, urged that he be given a chance to try. The results have been highly satisfactory.

Indoors, as transparencies in the Reptile, Penguin and Small Mammal Houses, the plastic labels are, we believe, absolutely permanent and will never have to be reprinted. We expect the same degree of permanency inside other buildings, such as the Kangaroo and Lion Houses, which have already been completely relabeled. Where the plastic sheets are exposed to the weather, we are not yet certain; a year's exposure of some labels has revealed no change in the plastic, but a gradual erosion of the ink has taken place. This may be minimized by a special ink, made up for us at the year's end and now undergoing out-of-doors tests. In any event, plastic labels out of doors outlast cardboard labels three to one—and in the end, if they fade out, the remaining ink can be washed off with benzine and the plastic sheet printed on again. We are indebted to Mr. Larsen for the skill, ingenuity and persistence with which he has pursued this problem.

Inevitably some special photographic problem stands out in a review of the year; this year it was our attempt to obtain a motion

picture in color, at ultra-slow speed, of a rattlesnake's strike, for inclusion in a film on the defenses of reptiles. We achieved it, thanks largely to the refusal by Henry M. Lester, our Photographic Consultant, to accept defeat. Staff Photographer Dunton made a motion picture on the year's activities for showing at the mid-winter Members' Meeting and contributed footage to the film called "Hippol" assembled from African material presented by Saul Blickman, one of our Members, and shot many scenes for "The Defenses of Reptiles," which is not yet in its final form. He turned in 418 still negatives.

At the Milwaukee meeting of the Biological Photographic Association, Mr. Dunton was elected a Fellow—a signal honor—and three of his still photographs, entered in national competition in the nature section, won First, Second and Honorable Mention awards. Equally gratifying, the paper by Mr. Dunton and Mr. Lester on "Motion Picture Photography of a Rattlesnake's Strike" was voted the best paper presented at the meeting.

Another distinction of our Staff Photographer should be recorded: he joined the very small group of persons attacked by a Komodo Monitor Lizard. While photographing our two specimens on June 24, the male took him unaware and with one motion of his claws ripped Mr. Dunton's left leg so badly that some sixty stitches were required to close the wounds. Fortunately he made a quick recovery from the cuts, which were long but not deep. It was the first time in a quarter of a century of photographic work around animals that he had been injured.

We are pleased to report the gift to the department of a 16 mm. Fenjon underwater motion picture camera and exposure meter by Robert Goelet, one of the Society's Trustees, and of a Speed Graphic, Polaroid Land Camera back and Linhof tripod by Henry M. Lester. During the year we added an Ascor electronic flash unit to our equipment, and can now take still photographs at 1/12,000th of a second.

In September the Curator took part in a symposium at the Louisville meeting of the American Association of Zoological Parks and Aquariums, speaking on "Promoting a Zoo in Cities Under 100,000 Population."

Seventeen papers were published in *Zoologica*, in a total of 198 pages. The Fifty-ninth *Annual Report* of the Society was published on May 20 and the six bi-monthly numbers of *Animal Kingdom* were issued.

DEPARTMENT OF EDUCATION

HERBERT J. KNOBLOCH, *Assistant Curator*

JANET M. CRAWLEY, *Assistant*

MARION P. MCCRANE, *Assistant*

THE BIGGEST EVENTS involving the Department of Education in the past year were the visits by New Englanders to the Zoological Park on the special New Haven Railroad Zoo Trains which made periodic trips from various points throughout New England during the Spring and Fall.

On March 23 and 24 Miss McCrane and Mr. Knobloch made a two-day trip to New Haven with five animals for advance publicity purposes concerning the trial train from Springfield, Mass., on Saturday, April 16. Working with John J. Murphy of the railroad's Public Relations Department, in New Haven and neighboring towns, one press conference was held and two radio programs and three television shows were participated in during the two-day stay. The results, though unknown and not anticipated at the time, were beyond all expectations.

On Friday, April 15, Miss McCrane and Mr. Knobloch travelled to Springfield with nine animals, to ride down on the first section of the train the following morning and show the animals to the passengers. Two other sections, one originating in Hartford and the other in New Haven, made up the whole train of three sections and 31 cars which carried a total of 2,664 passengers. The original estimate had been a maximum of 500 persons. Twenty buses transported the passengers from the Van Nest Station to the Zoo. A great deal of publicity, in the form of articles and still and motion pictures, both for the New Haven Railroad and the Zoological Park, resulted from this first highly successful special Zoo Train.

On later dates animals were also shown by Miss McCrane and Mr. Knobloch to passengers riding the special Zoo Trains originating for the first time in New London and Winsted. Other points of origin were Pittsfield and Providence. During the year 16,767 persons came on 17 trains on 10 different days (all Saturday trips). Eight trains started from Springfield alone, carrying 7,762 passengers.

VISITING SCHOOLS AND ORGANIZATIONS. Throughout the year 168,414 children and adults visited the Zoological Park and Farm-in-the-Zoo in 2,994 classes and organized groups from 2,355 schools and organizations. Both the general attendance and the number of schools and

organizations are new records. May, as usual, was our biggest month for class and group visitors and set a record for May and again for any one-month period in the Society's history, with a total attendance of 54,632 persons.

VISUAL AIDS. Assisting the Department of Publications and Photography, the Education Department again aided in the production of several new motion picture films. In its routine task of distributing our films, the Department handled 120 rental orders. These films were seen by 12,622 persons. On 29 occasions staff officers used films to illustrate talks and lectures. They were shown to some 3,000 persons. An additional approximate 7,500 viewers saw many of our films during the 32 special motion picture showings throughout the year. There were 5 preview requests. Very early in the year, "High Over the Borders" was awarded a third prize medal in a German film festival for sportsmen.

GUIDED TOURS. Ninety-five guided tours of the Zoological Park were conducted for 2,984 students. Throughout the year many tours of a special nature, both technical and popular, were conducted for special classes and groups. These included elementary and high school teachers; high school and college education, biology, zoology, ecology and anthropology students; blind children; cerebral palsy, cardiac and orthopedic cases; children with other physically handicapped or incapacitated conditions; and hospitalized but ambulatory adults. Many of the special tours were conducted by tractor train. Ten "behind-the-scenes" tours were conducted for 46 Society members and their guests.

SCHOOL LECTURE SERVICE. Miss McCrane visited 103 schools, organizations and institutions, and gave 329 talks illustrated with animals to a total of 32,999 children. A number of animal programs were provided for child patients in several hospitals. A special animal program and demonstration, a particularly interesting and gratifying one, was given for deaf and deaf-mute children attending the Lexington School for the Deaf in Manhattan.

LECTURES. Sixteen lectures and talks illustrated with motion picture films, Kodachrome slides and animals were given by different Department members during the year. Audiences approximating some 2,500 persons were addressed. Four radio programs and six television shows were also participated in.

QUESTION HOUSE. The Question House opened for the season on Sunday, April 24, and closed on Sunday, November 13. It was closed 18 days because of rain. During the entire time of operation the installation had 53,028 visitors. Questions break down as follows:

Miscellaneous animal questions.....	9,884
Questions requiring research.....	58
Platypus questions	1,298
Directional questions.....	3,445
	<hr/>
	14,685

MISCELLANEOUS. Mr. Knobloch continued as chairman of the Zoological Park's Safety Committee.

The 11th and 12th In-Service courses for teachers were given during the year and were well attended. At the beginning of the Spring course, the title was changed to read, "Utilization of the Bronx Zoo in the Science Program of Elementary and Secondary Schools," to include both elementary and high school teachers. During the Fall term Mr. Knobloch again acted as Board of Education coordinator and instructor for the course as well as assuming responsibility and charge of it for the Zoological Park.

COMPTROLLER'S DEPARTMENT

HERBERT F. SCHIEMANN, COMPTROLLER

THE CAREER AND SALARY PLAN, long awaited by management and employees, became a reality when the City of New York, from whom the Society receives considerable financial support, officially put that plan in operation as of July 1, 1955, with certain features retroactive to July 1, 1954. This is a general pay plan of much complexity, but with the understandable purpose of providing fair and comparable pay for comparable work, and regular increases in pay in proper proportion to increase of ability as demonstrated in service. The considerable task of modifying budgets, computing new rates of pay, changing payroll and personnel records and seeing that employees were paid their new rates at the earliest moment possible was handled promptly and efficiently by this department. All Society employees participate in this plan, whether paid wholly by the City of New York or from the Society's private funds, and are treated equally. The work of putting the Career and Salary Plan fully in operation is not yet completed and will continue into 1956.

The growth of the Society's Park Facilities' business has been notable. In 1946, sales of restaurant products, retail items and services totaled \$677,804. Such sales in 1955 failed by the barest margin to

reach \$1 million. We, like other businesses, benefitted from the higher spending by the average person. The average visitor to the Zoo in 1946 spent 24.5¢ whereas in 1955 he spent 47.3¢. Happily, the net income from facilities' sales in 1955 shows a fine increase over 1954.

We are grateful for the loyal and efficient services of the employees of this department and the help given by employees of other departments.

CONSTRUCTION AND MAINTENANCE

QUENTIN MELLING SCHUBERT, *Superintendent*

MOST NOTICEABLE of the major jobs undertaken by the Department of Construction and Maintenance in 1955 was the construction of large timber "pagodas" in the Orang-utan and Gorilla yards at the Great Apes House. Three of the five yards have now been fitted out with these structures, designed to give shade and to be used for climbing, and the other two will be completed in 1956.

Less apparent to the public but important as an operational detail was the building and installation of two rolling aluminum doors in the African Black Rhinoceros stall in the Elephant House. "Little Joe," the rhinoceros, is not as yet a dangerous animal but it is always more comfortable to regulate the goings and comings of such animals by positive, quick, remote control. With some rearranging of facilities, the former Keepers' Room adjoining the rhinoceros stall was converted to a shift cage with a hydraulically-operated door, and a similar door gives access to the out-of-doors yard. Both doors can be actuated by a lever from the front of the stall. At the same time, a glass barrier between the African Black Rhinoceros and the public was installed.

At the Large Bird House the old revolving doors, always an irresistible temptation to children to "ride the merry-go-round," were removed and new swing doors of the pivot type replaced them.

The African Terrace Restaurant is one of our older installations and much needed work was done on it last year—repairs to the tile roof, copper flashing and gutters, pointing-up of brick work and terrace walls, plaster cornice work repaired indoors, and the whole interior painted.

There is, of course, no end to the small but important jobs that have to be done if the Zoological Park is to be kept looking its best. Two

barren plots west of the Wildfowl Pond were graded with topsoil, seeded, and lawn areas established. Fifty feet of benches were set up to overlook the pond. The six wooden flagpoles on Baird Court were replaced by steel poles obtained from the World's Fair site through the Department of Parks. In the Concourse Circle, the Rockefeller Fountain was restored to its original beauty. This required repair of the limestone and granite, new concrete bottom in pools at the first and second levels, cleaning all the stone and repair of all the water and drainage facilities. The job was done by contract at a cost of about \$11,000.

In addition to several thousand work orders fulfilled, the following work was done: New electric service provided to the Zoobar, about 2,800 square yards of paving repairs made to paths, the coal boiler in the Commissary building converted to an oil burner, a new heating boiler installed in the Ostrich and Small Mammal house, the interior of the Tropical Research laboratory painted and a tile floor installed in the library room. The section of Bear Dens which will remain in operation during construction of the moats, was repaired and repainted. Three Tractor Trains were reconditioned, one of which was the former "Royal Train" used at the World's Fair, which we obtained from Sturbridge Village, Mass. Seven Tractor Train units are now in operation during the season.

At various times the Zoo was struck by storms of high wind and rain. These toppled several of our most beautiful large trees and also caused damage by flooding cellars. We regret to report the loss of a very fine Red Oak which shaded almost the entire east side of the Elephant House corrals. The tree, which was about 210 years old, contracted a shoestring fungus disease some five years ago and has since been dying back gradually. It was 125 feet high, 97 feet in crown spread and was 52 inches in diameter at breast height.

FACILITIES DEPARTMENT

EDWARD KEARNEY, *Manager*

EDWARD QUINN, *Assistant Manager*

RESTAURANT facilities in the Zoological Park have been for some years adequate for the serving of all but peak week-end and holiday crowds. Such modifications as we make from year to year in

these facilities are likely to be merely modernization of certain sections or minor improvements to expedite service. This was the case in 1955.

As the only restaurant operating every day in the year, the Cafeteria must be kept in top-notch condition. Late in the year the interior was repainted and the public space at the service counter was enlarged. Terrace tables and chairs have been repainted in bright colors and beach umbrellas have been ordered for the entire terrace. Despite the large variety of hot and cold foods offered at the Cafeteria, hamburgers and French-fried potatoes continue to be most in demand.

A modernization program was started in 1954 at the African Terrace Restaurant and a remarkable increase in business resulted. Last year we continued the modernization and expect continued growth. New safety railing was installed around the terrace, the interior was completely redecorated, a stainless steel covering was installed at the coffee section and a two-tone formica wall panel was put up behind the service counter. The African Terrace, long a step-child in the restaurant services in the Zoological Park, now incorporates all the necessary labor-saving devices and attractive food displays. It will be a good addition to the refreshment services.

In order to cope with the increasing demand for souvenirs, one of the sales units near the Reptile House was enlarged. As a result, sales exceeded by far the all-time record set in 1954.

For quite a while the animal-food vending machines around the Zoo have been inadequate to serve all the visitors who wanted to buy pellets to feed the animals. We have now stocked the packaged animal-food at refreshment stands, with increased convenience to the public and greater gross sales for ourselves.

MISCELLANEOUS OPERATIONS AND SERVICES

CHILDREN'S ZOO. For the tenth consecutive year the Children's Zoo was host to more than 300,000 persons. During its fifteen years of operation, it has amassed the impressive total attendance of 4,372,974, and under the efficient supervision of Corrine Dalsgaard it continues to be an irresistible attraction to children and adults alike.

RIDING TRACKS. While the camel, donkey and llama rides reflected

the decrease in Zoo attendance, this unit under the able management of Riding Track Master Henry Bartels provided enjoyment for 178,927 children.

Rides at the Pony Track under Ponymaster Edward Foran numbered 178,488, a figure that has not been exceeded since 1952.

TRACTOR TRAINS. Rides totalled 606,268 for seven trains in 1955, against 592,613 for six trains in 1954.

FARM-IN-THE-ZOO. The Farm-in-the-Zoo was open from April 16 to November 13 under the very able superintendency of James Coder. The attendance of 90,787 included 31,116 children admitted free in conducted groups, and is the largest ever recorded at the Farm.

Four cows, three calves and the feed for them were supplied by Sheffield Farms and Breyers Ice Cream. Children's Zoo stock, including 1 goat, 3 sheep, 10 geese, 16 ducks and 8 chickens were quartered at the Farm during the winter. Eggs were supplied for custard for the Duck-billed Platypuses. Farm production totals were: wool, 107 pounds; poultry, 419 pounds; lamb, 910 pounds; goat, 55 pounds; eggs, 802.5 dozen.

CENSUS OF FARM LIVESTOCK

December 31, 1955

Belgian Horse	1
Dexter Heifer	1
Hogs	8
Sheep	12
Goats	11
Geese	12
Ducks	24
Peacocks	2
Turkeys	7
Chickens	185
Guineafowl	2
Pigeons	86
Total	351

THE AQUARIUM

CHRISTOPHER W. COATES, *Curator and Aquarist*

JAMES W. ATZ, *Assistant Curator*

ROSS F. NIGRELLI, *Pathologist*

MYRON GORDON, *Geneticist*

FOR THE FIRST few months of 1955 we lived in pleasant anticipation that the structure of the New York Aquarium would be ready for occupancy in October and that the end of the year would see us busily engaged in furnishing and stocking it. Our hopes held until early autumn, when it became increasingly apparent that the contractors were not keeping up with their schedules. The estimated date of completion was periodically put forward, and by the end of the year the expectation was that the building would be handed over to us some time in April.

Many factors contributed to this uncertainty and delay. In spite of the most detailed blueprints and specifications, many unanticipated contingencies arose. This is a once-in-a-lifetime building for the contractors, who are meeting situations and problems not even imagined in the erection of any ordinary structure. The engineering and contracting difficulties were aggravated by various shortages of materials, some of which developed because of the diversion of building materials to the areas devastated by hurricanes during late summer and fall.

At the time of writing this report, the date set for us to receive the finished building is June 1, 1956. To open the place to the public before the spring of 1957 appears impossible.

Although some of the arrangements made in prospect of a 1956 opening will have to be made again, because of the transitory nature of plans for collecting specimens in the wild where conditions change from day to day, much of the groundwork laid during the year will still serve to facilitate the gathering of our collections and the operation of our tanks and water systems when we do get under way. During a spring trip to Florida Curator Coates made new contacts among collectors of marine fishes, mammals, invertebrates and coral (with which we decorate our tanks), in addition to maintaining old ones.

Experiments with a new type of tank construction were commenced. This method, which involves the use of fiber-glass and polyester resin, gives promise of making possible the building of aquaria

remarkably light in weight yet strong enough to carry the heavy load and pressure of water safely and without leaking. Moreover, these aquaria cost much less to build, in both time and material, and can be fabricated in all sorts of shapes not feasible with the conventional type of construction.

There was a sharp drop in the number of children who fished in our so-called Casting Pool. An estimated 3,000 junior fishermen utilized the installation from April 30 to October 9. A shortage of fish certainly was not the cause of the decrease in attendance because the pool was stocked on three different occasions with a total of nearly 5,400 fishes of five different species, mostly Yellow Perch, Bluegills and Pumpkinseeds. These were supplied through the generosity of the New York State Conservation Department. From June to September, inclusive, approximately 2,000 junior fishermen caught somewhat less than 900 fishes. Furnishing living earthworms to feed the Duck-billed Platypuses and servicing the shipments of other live food for them were other auxiliary activities.

EXHIBITIONS. A number of fishes, both freshwater and marine, were exhibited for the first time in our collections. Through the courtesy of the Steinhart Aquarium we were able to show the striking Moorish Idol, Forceps Fish and Yellow Tang from Hawaii. From Sol Soberman we received a specimen of the Siamese Head-breather, *Gyrinocheilus aymonieri*, a species noted for its peculiar method of respiration. By purchase we obtained the following species never before represented in our collections: *Polypterus delhezi*, *Epalzeorhynchus kalopterus*, *Hyphessobrycon metae*, *Ctenolucius hujeta*, *Serrasalmus elongatus*, *Catoprion mento*, *Microbrycon cochui*, *Sternarchus oxyrhynchus*, *Leiocassis siamensis* and *Pseudostegophilus nemurus*. Through the good offices of Dr. Walter Van den bergh of the Société Royale de Zoologie d'Anvers we received *Synodontis notatus* and *Tetraodon schoutedeni*.

Additional Congolese fishes sent to us by the Société included *Protopterus dolloi*, *Ophicephalus obscurus* and *Ctenopoma kingsleyae*. Other noteworthy donations received during the year were: a pair of *Belonesox belizanus* from Dr. Murray Sanders of the University of Miami, six *Lepisosteus productus* from Mervin Roberts and William A. Sternke, four large *Colossoma nigripinnis* also from Mr. Roberts, a collection of unusual poeciliids from Albert Greenberg and cichlids from the Department of Animal Behavior of the American Museum of Natural History.

Two small Pirarucus, *Arapaima gigas*, were obtained through Paramount Aquarium, Inc., but unfortunately these did not long survive. A number of unusually large Mudspringers, purchased early in the

year, have done well, however. For somewhat more than a month we were able to maintain two specimens of *Vandellia*, one of the small, blood-sucking catfishes of South America. Although they were not suitable for exhibition, we were able to make observations on their bizarre feeding habits.

RESEARCH. The scientific investigation of aquatic life in all its myriad forms gains in importance year by year. Limitations inherent in standard laboratory animals such as the rat and mouse in research programs have turned the attention of experimental biologists and medical men to less familiar creatures, especially those that inhabit water. Even more noticeable is the resurgence of interest in the sea as a source of food, improperly exploited at present and of undetermined value for the future. The Aquarium's interest in aquatic animals as subjects for scientific study is, one might say, congenital, and because of the very ingrained nature of our experience with them, we believe that the Aquarium represents a logical and potentially most valuable fountainhead of information to guide the work of others and living materials with which to seek some of the answers ourselves. It is unfortunate that no public aquarium, because of its necessary emphasis on exhibition, has ever been able to develop more than a fraction of its scientific assets. Our hope is that the new New York Aquarium, when finally erected in its entirety, will provide the first exception to this melancholy fact.

Twenty-odd years ago at the Battery, Curator Coates recognized the peculiar suitability of the Electric Eel as a laboratory animal and was instrumental in bringing it to the attention of biophysicists and neurophysiologists. This fish is now being studied in laboratories in the United States, Europe and its native Brazil. In our investigations, it is an important source of information about the generation of bio-electric potentials, one of the essential aspects of any understanding of nerve function. This work is being carried out by a group of scientists headed by Dr. David Nachmansohn of the College of Physicians and Surgeons, Columbia University, and including Curator Coates. By developing techniques that make it possible to insert micro-electrodes into single electric cells, Dr. Mario Altamirano has greatly stimulated the whole investigation. Many aspects of the generation of bio-electric currents have been revealed for the first time during the past year and much insight into the relationship between the proteins of the acetylcholine system and the various electrical manifestations has been obtained. Within the last few months Dr. Altamirano has succeeded in developing a new experimental arrangement in which two small chambers are separated by the conducting membrane of a single cell. This remarkable preparation may make

it possible to study, in an entirely new manner, the physical and chemical factors vital to the conduction of nerve impulses, particularly the flow of ions. This work is being done in collaboration with Dr. Ernest Schoffeniels of Belgium, who is studying the flow of ions by using radioactive material, and with Dr. Max Eisenberg, who is concentrating on the biochemical aspects of the problem.

The latest investigations of Curator Coates make it seem likely that all the fishes of the Family Gymnotidae, of which the Electric Eel is the largest and best known member, are capable of sending out impulses of electricity into the water surrounding them. Three more of these knifefishes were found to be electrogenic, making six species in all, not including the Electric Eel. One unusual aspect of the electric discharges of the knifefishes is that no two are alike, each species possessing its own electric signature, so to speak. We believe that some promising laboratory fishes will be found among the knifefishes, particularly because their electric discharges present several features entirely different from those of the Electric Eel.

In our Genetics Laboratory several strains of fishes are maintained because of their value as experimental animals. One of these is an inbred strain of Platyfish now in its twenty-first generation, having been maintained by brother-to-sister matings since 1939. A dramatic demonstration of the usefulness of this inbred stock occurred when one of Dr. Gordon's graduate students, Klaus D. Kallmann, conducted experiments on fin transplantation. Previously such transplantations have been successful only when they involved a single fish; that is, when the fin of a fish was surgically removed and put back on some other part of the same fish's body. With our highly inbred Platyfish, however, it proved possible to transplant fins from one individual to another—graphic proof of the genetical uniformity of the members of this strain, which is unique among all the lower vertebrates employed in laboratories.

Other strains of fishes are kept in the Genetics Laboratory because they possess certain heritable pigment patterns. These have been used to study pigment cell growth, both normal and abnormal, especially in the production of melanoma, which in man is one of the most malignant of all cancers. By using some of these fish, Dr. Douglas G. Humm of the University of North Carolina has been able to determine the embryological origin of the pigment cells responsible for the melanoma with which the fish are sometimes afflicted and which Dr. Gordon can produce at will by appropriate genetic crosses. Not only is this finding of obvious importance to an understanding of the disease, but it represents the first time that a tumor-producing cell has been traced back to its embryological origin.

From the National Cancer Institute, National Institutes of Health of the U. S. Public Health Service, we received a grant of \$15,040 in support of the Genetics Laboratory. Under Dr. Gordon's direction, the Laboratory has completed fifteen years of its existence in the Whitney Wing of the Department of Birds of the American Museum of Natural History where facilities have been made available to us most generously throughout this period. Support for the work of the Genetics Laboratory has also been received from the Damon Runyon Memorial Fund for Cancer Research in the form of a fellowship to Dr. Sylvia Greenberg, which will enable Dr. Greenberg to continue her biochemical studies of the pigmented tumors of fishes bred in the Laboratory.

A new use of radioactive iodine has provided fresh impetus to the study of thyroid physiology that is being conducted by Dr. Gordon and Miss K. France Baker of the Genetics Laboratory in collaboration with Dr. Aubrey Gorbman of Columbia University. The thyroid gland of the vast majority of fishes is not an encapsulated structure as it is in higher vertebrates. It therefore cannot be removed by surgery, but by treating fish with radioactive iodine it is possible to destroy their thyroid glands, since thyroid cells have a special affinity for iodine. Platyfishes with no thyroids have been obtained by this method and a study of them is being made to find out what are the effects of the loss of this endocrine gland.

Dr. Nigrelli's research efforts have centered around the phenomena of antibiosis and animal exclusion as they exist in the sea. That marine animals employ chemical means to protect themselves and to obtain space to live has become more and more evident. With a group of biochemists from Mount Sinai Hospital, headed by Dr. Harry Sobotka, Dr. Nigrelli completed a preliminary analysis of the chemical composition of Holothurin, an extremely poisonous substance from a species of West Indian sea-cucumber. This substance was discovered by Dr. Nigrelli in 1952. Chemical analysis revealed that Holothurin is a steroid saponin, the first chemical of this type ever found in an animal. Medically Holothurin has turned out to be of considerable interest. Dr. Nigrelli and Father T. D. Sullivan of St. Michael's College have been able to prolong with Holothurin treatment the lives of mice doomed to early death by a type of cancer. It is, of course, an extremely long step from the laboratory mouse to the human patient, especially when dealing with a substance as toxic as Holothurin. Attempts are now being made to associate the chemical structure of the substance with its anti-tumor properties. In order to obtain more material for chemical analysis, Dr. Nigrelli spent a month at the Lerner Marine Laboratory in the British West Indies where he collected about a kilo of the

sea-cucumber tissue richest in Holothurin. While at the Laboratory, Dr. Nigrelli also investigated the antibiotic principles elaborated by certain sponges.

Studies on epibiosis were undertaken by Drs. Nigrelli and Jakowska and Mr. Padnos to determine under what circumstances aquatic one-celled organisms, normally harmless to fish, may take up their existence on a fish's body and cause it harm. This pseudo-parasitism is responsible for deaths among fishes kept in aquaria because the unnatural conditions of captivity sometimes favor this abnormal relationship. During the year, Drs. Nigrelli and Jakowska also conducted experiments on the effects of bentonite on the liver of fish.

In anticipation of his projected evaluation of the evolutionary relationships among the genera of the Family Poeciliidae, Donn E. Rosen of the Genetics Laboratory has prepared skeletons and cleared specimens of more than one hundred different species of poeciliid fishes. The first stage of this detailed analysis deals with the xiphophorins, the Tribe comprising the Platyfishes and Swordtails with which the Laboratory has been primarily concerned. A taxonomic revision of this group is well under way.

The preparation of extensive review papers occupied staff members through much of the year. Mr. Atz and Dr. Grace E. Pickford of the Bingham Oceanographic Laboratory have nearly completed their monographic treatment of the physiology of the pituitary gland of fishes. Dr. Nigrelli worked on a review of the physiology of fish diseases, and Dr. Gordon prepared the chapter on physiological genetics that will appear in the forthcoming book, "Physiology of Fishes."

COLLABORATION. When laboratories and governmental agencies find that they require unusual fishes or other aquatic animals in their work, they quite naturally turn to us. The problem of supplying such creatures, if indeed they can be obtained at all, has frequently taxed our ingenuity as well as our facilities—and particularly so with our present limited installation in which we cannot handle large specimens at all and can only maintain marine or cold water ones for short periods and at excessive cost. Nevertheless, we have been able to provide a number of investigators and organizations with the animals they desired, among them Dr. I. Chester Jones of the University of Liverpool, Dr. Ruth Bellairs of St. Bartholomew's Medical College in London, Dr. Mario Pecini of the Instituto Regina Elena per lo Studio e la Cura dei Tumori in Rome, Dr. Perihan Sadoglu of Istanbul Üniversitesi, Dr. John Luft of the Harvard Medical School, Dr. Jonathan Wittenberg of the Albert Einstein College of Medicine of Yeshiva University, Dr. Daniel Ludwig of Fordham University, Dr. H. Clark Dalton of New York University, the National

Cash Register, Inc., and the Chicago Zoological Society. After unsuccessfully trying to import live *Tilapia melanopleura* (= *T. zilli*) from the Belgian Congo in order to tranship them to Hawaii for the Division of Fish and Game, we were finally able to secure specimens from the Department of Agriculture of Antigua, B. W. I. The fish were then sent to the Steinhart Aquarium from where they were flown to Oahu. It is hoped that these herbivorous fish will provide a means of biological control of aquatic vegetation as well as an economical source of food and bait. Although two attempts were made, we have yet to accomplish the shipping of live Buffalo Fish to Israel, a project undertaken in collaboration with Dr. H. S. Swingle of the Alabama Polytechnic Institute and the David Riemer Company of New York. Pondfish culture provides one of the major sources of fish in Israel, and the Buffalo Fish is expected to prove a valuable addition to the limited number of species at present available for mass culturing in that country.

Early in the year Dr. Nigrelli flew to the Pacific coast to consult with the State of California Department of Fish and Game regarding a parasitic disease that seriously affected several of their largest trout hatcheries.

Information on the care of aquatic animals in captivity and the setting up of water circulations toward that end was given to the Rockefeller Institute, the newly created Department of Biological Pathology at The Johns Hopkins University, the New York State College of Medicine at Syracuse, Sears, Roebuck de Colombia and Ebaugh & Goethe Consulting Engineers of Gainesville. Public aquariums are being planned for the cities of Philadelphia, Lansing, Portland (Oregon), Quebec, Victoria (B. C.), Halifax, New Delhi, Moji (Japan) and the Transvaal, and we have been consulted by the responsible authorities, both for general information to orient them and for specific data to solve particular problems. As in previous years, we have cooperated with the Department of Marine and Aviation, New York City; the Federal Security Agency, Pure Food and Drug Administration; the Department of Health, New York City; the Fish and Wildlife Service, Department of the Interior; and the Conservation Department, State of New York.

Collaborators working with the Aquarium during the year were:

DRS. DAVID NACHMANSOHN, MARIO ALTAMIRANO, IRWIN B. WILSON, WALTER SCHLEYER and MAX EISENBERG, Department of Neurology, College of Physicians and Surgeons, Columbia University.

DR. ERNEST SCHOFFENIELS, University of Liège and Department of Neurology, College of Physicians and Surgeons, Columbia University.

DR. M. VERTNER BROWN, College of the City of New York.

DRS. HORACE W. STUNKARD, HARRY A. CHARIPPER and MILAN J. KOPAC, New York University.

- DR. ELI D. GOLDSMITH, New York University Dental College.
 DR. AUBREY GORBMAN, Barnard College, Columbia University.
 DR. SOPHIE JAKOWSKA, College of Mount St. Vincent, New York.
 DR. JAMES R. WESTMAN, New Jersey Agricultural Experiment Station, Rutgers University.
 MISSES FRANCESCA R. LAMONTE and PRISCILLA RASQUIN, DRs. CHARLES M. BREDER, JR., LESTER A. ARONSON and T. C. SCHNEIRLA, American Museum of Natural History.
 DRs. DANIEL MERRIMAN and GRACE E. PICKFORD, the Bingham Oceanographic Laboratory, Yale University.
 DRs. CARYL P. HASKINS, SEYMOUR HUTNER, PAUL A. ZAHL and LUIGI PROVASOLI, and JOHN McLAUGHLIN, Haskins Laboratories, New York.
 DR. RECAI ERMIN, University of Istanbul.
 DRs. HARRY SOBOTKA and J. D. CHANLEY, and HERMAN BAKER, Department of Chemistry, Mount Sinai Hospital.
 DR. HAROLD SPARROW, Brookhaven National Laboratory, Long Island.
 DR. DOUGLAS G. HUMM, University of North Carolina.
 DR. T. D. SULLIVAN, S.S.E., St. Michael's College, Winooski, Vt.
 DR. SYLVIA GREENBERG, Damon Runyon Memorial Fellow, New York University.
 DR. PATRICIA KADOW, College of St. Elizabeth, Morristown, N. J.
 DR. OLGA BERG, University of Rochester School of Medicine.
 IRWIN ALPERIN, Conservation Department, State of New York.
 DR. JULIUS FELDMESSER, Central Florida Experimental Station, U. S. Department of Agriculture.
 GEORGE FASSULIOTIS, U. S. Department of Agriculture, ARS-Nematology Section, Hicksville, Long Island, and New York University.
 MORTON PADNOS, Protista Research Laboratory, New York.
 HUGH GORDON, Columbia University.
 DR. SAMUEL BIEBER, Wellcome Laboratories, Tuckahoe.
 DR. HELEN VISHNIAC, Yale University.

Dr. Nigrelli conducted courses on ichthyology and fish diseases at the Graduate School of Arts and Sciences of New York University, and Dr. Gordon similarly conducted one on fish genetics. Under Dr. Gordon's sponsorship, Mrs. Sylvia Greenberg received the degree of Doctor of Philosophy, and under Dr. Nigrelli's, Alfonso N. Petrocci received the degree of Master of Science.

PUBLICATIONS. The following scientific and popular articles by members of the staff appeared during the year:

MR. COATES

- La Quimica del Acuario. *Acuario* (Havana), Vol. 1, No. 6, pp. 137-138. (1954). Vol. 2, No. 1, p. 9, No. 2, pp. 35, 37.
 Lake Peten Molliies a Handsome Variety, *Mollieniesia petenensis* (Guenther). *Fish Culturist*, Vol. 34, No. 5, p. 33-34.
 Goldfish. *Indian Aquarist*, Vol. 3, No. 1, pp. 5-6.
 Fish Seems to Get Bored Like Humans. *Indian Aquarist*, Vol. 3, No. 1, pp. 11-12.

- Aquarium. *Encyclopedia Americana*, Vol. 2, pp. 105-106.
- Aquatic Animals. *Encyclopedia Americana*, Vol. 2, p. 106.
- Blindfishes. *Encyclopedia Americana*, Vol. 4, p. 86.
- How's the New Aquarium Coming Along? *Animal Kingdom*, Vol. 58, No. 5, p. 137-138.
- The Care of Turtles and Small Alligators. Third edition, revised. N. Y. Zoological Society. 12 pp.
- Three More Gymnotid Eels Found to be Electrogenic. *Zoologica*, Vol. 40, Part 4, pp. 197-198.
- Mechanisms of Direct and Neural Excitability in Electroplaques of Electric Eel. With Mario Altamirano and Harry Grundfest. *Journ. Gen'l Physiol.*, Vol. 38, No. 3, pp. 319-360.
- Electrical Activity in Electric Tissue. I. The Difference between Tertiary and Quaternary Nitrogen Compounds in Relation to their Chemical and Electrical Activities. With Mario Altamirano, Walter L. Schleyer and David Nachmansohn. *Biochimica et Biophysica Acta*, Vol. 16, pp. 268-282.
- Electrical Activity in Electric Tissue. III. Modifications of Electrical Activity by Acetylcholine and Related Compounds. With Mario Altamirano, Harry Grundfest and David Nachmansohn. *Biochimica et Biophysica Acta*, Vol 16, pp. 449-463.
- Weekly column on tropical fish in the *New York World-Telegram and Sun* continued for twenty-fifth year.

MR. ATZ

- Rare Black Piranha Comes to New York. *Aquarium Journ.*, Vol. 26, No. 1, pp. 3-7.
- The Fish with Holes in Its Head. *Animal Kingdom*, Vol. 58, No. 3, pp. 77-79.
- Aquarist and Pondkeeper*, Vol. 20, No. 5, pp. 85-86.
- From Quetzalcoatl to Cancer. *Aquarium Journ.*, Vol. 26, No. 7, pp. 195-201.
- Fishes Come in White, Too. *Aquarium Journ.*, Vol. 26, No. 11, pp. 343-350.

DR. NIGRELLI

- Preliminary Studies of Menhaden and Their Mass Mortalities in Long Island and New Jersey Waters. With James R. Westman. *New Jersey Outdoors*, Vol. 5, No. 3, pp. 12-17, 21. (1954).
- Longevity Records of Vertebrates. *Intelligence Digest Supplement [World Science Review]*, January, 1955, pp. 1-5.
- Functional Thyroid Tumors in the Kidneys of Platyfish. With K. France Baker, Olga Berg, Aubrey Gorbman and Myron Gordon. *Cancer Res.*, Vol. 15, No. 2, pp. 118-123.
- The Chemical Nature of Holothurin, a Toxic Principle from the Sea-cucumber (Echinodermata: Holothurioidea). With J. D. Chanley, Stella K. Kohn and Harry Sobotka. *Zoologica*, Vol. 40, Part 1, pp. 47-48.
- The Effects of Holothurin, a Steroid Saponin of Animal Origin, on Krebs-2 Ascites Tumors in Swiss Mice. With T. D. Sullivan and K. T. Ladue. *Zoologica*, Vol. 40, Part 1, pp. 49-52.
- Further Chemical Analysis of Holothurin, the Saponin-like Steroid from the Sea-cucumber. With J. D. Chanley, Stella K. Kohn and Harry Sobotka. *Zoologica*, Vol. 40, Part 2, p. 99.
- Preliminary Studies of Menhaden and Their Mass Mortalities in Long Island and New Jersey Waters. With James R. Westman. *N. Y. Fish and Game Journ.*, Vol. 2, No. 2, pp. 142-153.

- Local Cell Responses to Induced Skin Infection in *Triturus viridescens* after Whole-body Irradiations. With Sophie Jakowska and A. H. Sparrow. *Radiation Res.*, Vol. 1, No. 6, p. 569. Abstract. (1954).
- Spontaneous Neoplasms in Fishes. IX. Hepatomas in Rainbow Trout, *Salmo gairdneri*. With Sophie Jakowska. *Proc. Amer. Cancer Res.*, Vol. 2, No. 1, p. 38. Abstract.
- A Steroid Saponin of Animal Origin. With J. D. Chanley and Harry Sobotka. Résumé Communications, Third International Congress of Biochemistry, Section 1, Paper 10. Abstract.
- A Taxonomic Re-evaluation of *Dactylosoma* Labbé, 1894, a Babesoid of Cold-blooded Vertebrates. With Sophie Jakowska. *Journ. Protozoology*, Vol. 2, Suppl., p. 8. Abstract.
- Pathogenicity of Epibionts in Fishes. With Sophie Jakowska and Morton Padnos. *Journ. Protozoology*, Vol. 2, Suppl., p. 7. Abstract.

DR. GORDON

- Heredity in Fishes with Crooked Spines. *Aquarist and Pondkeeper*, Vol. 19, No. 9, pp. 181-182. (1954).
- A Type of Inheritance Mendel Never Knew: Multiple Allelism. *Aquarium Journ.*, Vol. 26, No. 1, pp. 12-14, 19.
- A Little about the Guppy. *Tropical Fish Hobbyist*, Vol. 3, No. 3, pp. 24-28.
- Lake Petén Mollies Again. *Animal Kingdom*, Vol. 58, No. 1, pp. 13-14.
- Royal Mollies from Lake Petén. *Tropical Fish Hobbyist*, Vol. 3, No. 4, pp. 3-6.
- Water Life and Aquaria World*, N. S., Vol. 10, No. 3, pp. 116-117.
- Those Puzzling "Little Toms." *Animal Kingdom*, Vol. 58, No. 2, pp. 50-55.
- How Professor Ishiwara Created a Blue-black Medaka from Brown and White Ones! *Aquarium Journ.*, Vol. 26, No. 4, pp. 66, 69-70, 72.
- Debutsu-gagu-Kogi. *Aquarist and Pondkeeper*, Vol. 20, No. 1, p. 2. *Aquarium Journ.*, Vol. 26, No. 6, pp. 145-146.
- Creation of the Blue-black Medaka. *Aquarist and Pondkeeper*, Vol. 20, No. 2, pp. 23-24.
- Swordtails Naturally. *The Aquarium*, Vol. 24, No. 5, pp. 141-144.
- Those Paradoxical "Little Toms." *Tropical Fish Hobbyist*, Vol. 3, No. 5, pp. 17-31, 34.
- "Guppies as Pets. A Guide to the Selection, Care and Breeding of Guppies." TFH Publication, Jersey City. 32 pp.
- Discovering the Secrets of the Little Toms. *Aquarist and Pondkeeper*, Vol. 20, No. 6, pp. 111-115.
- Bettas Like Warm Waters. *Aquarium Journ.*, Vol. 26, No. 9, pp. 276-278.
- Histrio*—the Fish on the Sargasso Sea Merry-go-round. *The Aquarium*, Vol. 24, No. 12, pp. 386-393.
- Functional Thyroid Tumors in the Kidneys of Platyfish. With K. France Baker, Olga Berg, Aubrey Gorbman and Ross F. Nigrelli. *Cancer Res.*, Vol. 15, No. 2, pp. 118-123.
- Regeneration of Melanomas in Fishes. With Recai Ermin. *Zoologica*, Vol. 40, Part 2, pp. 53-83.
- Post-natal Lethal Gene in the Platyfish *Xiphophorus maculatus* when Homozygous. With K. France Baker. *Anat. Rec.*, Vol. 122, No. 3, p. 436. Abstract.
- Observations on Radiothyroidectomy of Juvenile Platyfish. With K. France Baker, Olga Berg and Aubrey Gorbman. *Anat. Rec.*, Vol. 122, No. 3, pp. 453-454. Abstract.

PERSONNEL. In the death of Tankman Willard Bloom, we suffered an unexpected as well as serious loss; Mr. Bloom had been charged with the care of our freshwater tropical fishes since 1941. James Savage retired in July, after 29 years of service, during which he became known as the Aquarium's most colorful and piquant personality.

Dr. Nigrelli served as Vice-president of the New York Academy of Sciences and became President-elect of that organization in December, to take office in 1957. He was appointed to the National Research Council's Committee on the Procurement of Animals from Nature (Institute of Animal Resources, Division of Biology and Agriculture). He continued to serve as Coordinator of Civil Defense Activities in the Zoological Park.

Members of the staff gave papers and lectures and participated in discussions at the following institutions and places:

Third International Congress of Biochemistry, Brussels.

Gordon Cancer Conference, New London, N. H.

American Association for Cancer Research, San Francisco meeting.

American Society of Zoologists, East Lansing meeting.

Society of Protozoologists, East Lansing meeting.

Radiation Research Society, New York meeting.

American Fisheries Society, Northeast Section, Atlantic City meeting.

American Association of Zoological Parks and Aquariums, Louisville meeting.

American Society of Ichthyologists and Herpetologists, symposium on aquaria, San Francisco meeting.

New York Academy of Sciences, symposium on anaplasmosis, babesiosis and toxoplasmosis.

Beta Beta Beta Society, College of St. Elizabeth, Morristown, N. J.

California Department of Fish and Game, special meeting at Carmichael.

Aquarium Society of New York.

Passaic County Aquarium Society.

"Adventure," CBS-TV.

Radio station W N B C.

CENSUS OF THE AQUARIUM

December 31, 1955

CLASS PISCES—FISHES

SUBCLASS TELEOSTOMI—Ray-finned Fishes

<i>Orders</i>		<i>Species</i>	<i>Specimens</i>
PROTOSPONDYLI	Freshwater Gars	1	4
CLADISTA	Lobefins	2	2
ISOSPONDYLI	Herring, Salmon, Pikes	1	1
OSTARIOPHYSI	Minnows, Characins, Catfishes ...	107	242
APODES	Eels and allies	1	3
CYPRINODONTES	Top-minnows	8	170
PERCESOCES	Silversides, Mulletts and allies	1	1
PERCOIDEI	Spiny-rayed Fishes	5	12
LABYRINTHICI	Fighting Fishes and allies	13	34
CHROMIDES	Demoiselles and Cichlids	15	89
PLECTOGNATHI	Puffers and allies	1	4
GOBIOIDEI	Gobies and allies	1	4
SUBCLASS CHOANICHTHYES—Fringe-finned Fishes			
DIPNEUSTI	Lungfishes	2	8
CLASS REPTILIA—Reptiles			
CHELONIA	Turtles and Tortoises	1	1
	TOTALS	159	575

Summary: Orders, 14; Species, 159; Specimens, 575.

DEPARTMENT OF TROPICAL RESEARCH

WILLIAM BEEBE, *Director Emeritus*

JOCELYN CRANE, *Assistant Director*

HENRY FLEMING, *Entomologist*

ROSEMARY KENEDY, *Research Assistant*

GENERAL ACTIVITIES. Centering in 1955, the Department spent nine months in the field. This period was divided between two expeditions, of almost equal duration: the Fifty-third, with the ultimate goal of Simla, of 141 days; and the Fifty-fourth, with Singapore as our objective, occupying 144 days.

PART I. FIFTY-THIRD EXPEDITION. The sixth season of occupancy of Simla and St. Patrick's began on November 26, 1954, when the staff sailed on the *Alcoa-Puritan* from New York. The usual stops were made at Puerto Rico, Venezuela, British Guiana, Surinam and Port-of-Spain, Trinidad.

En route we visited Redfield Vose in the Virgin Islands, being flown both ways in his plane, and were entertained at the Museum and Zoo in Georgetown, British Guiana. In Paranam, Surinam, we reached the seacoast after much difficulty and Jocelyn Crane was able to study the fiddler crabs there for the first time. Arrived at Simla on December 15. As usual, we have to thank the Alcoa Steamship Company for a host of kindnesses.

The staff flew north to New York on a Pan-American plane on April 15.

RELATIONS WITH OTHER INSTITUTIONS. We entertained the members of several scientific and natural history clubs. Those from the Imperial College represented every continent. Miss Crane gave an illustrated lecture to the Trinidad Natural History Society.

CONSTRUCTION. Before our arrival a severe earthquake so weakened the kitchen that it was a constant risk. After our departure, Henry Fleming stayed on to supervise the demolition of the building and the erection of a new one in its place.

Insectary Number Two was so weakened by damp rot and termites that it was pulled down before we left. It is hoped that a new building of aluminum may replace it. It did good service for four seasons and fully proved its scientific worth.

The only other item under construction was a series of orchid and bromeliad racks and shelters, with the hope that they will be of real value in the study of insect pollination.

VISITORS. The list of visitors to Simla in 1955 was a long and notable one, including Mr. and Mrs. William Nichols, the William Kugemans, Dr. and Mrs. Herklots, the George Mercks, Dr. Wageneer Hummelinck, David Williams, Commander and Mrs. Hamond, Mrs. Senior-White, Dr. Van Deseer, Mrs. Mabel Ingalls and Dr. and Mrs. Hill. Outstanding among the guests were Dr. and Mrs. Konrad Z. Lorenz and Dr. and Mrs. Harold Anthony, each of whom spent two weeks with us at the Station. Dr. Lorenz had never visited the tropics before and was keenly interested in every vertebrate which ran, climbed, flew or swam. Dr. Anthony was able to gather an excellent representation of Trinidad orchids.

SCIENTIFIC ACTIVITIES. Mr. Fleming, besides his scientific work, took full charge of the Maintenance and Construction during his stay at Simla. This consisted of the tearing down of the big Insectary, the rebuilding of part of the generator and the demolition and rebuilding of the kitchen. His chief concern is a thorough systematic study of the Ctenuchidae of Trinidad and of Rancho Grande.

Rosemary Kenedy continued life history and relative abundance records of both day- and night-flying species of ctenuchid moths, in addition to routine Department photography. Six species of Ctenuchidae were reared from eggs or larvae, four probably for the first time. One was of special interest because it proved to be, as suspected, dimorphic and very variable. Two species of larval parasites were found; none had been recorded before in this family of moths. Several species were taken which are new records for Trinidad and one species which is apparently new to science.

Miss Crane continued the comparative study of the behavior of a number of species of local butterflies in the insectaries. An important event of the season was the first successful rearing of *Heliconius melpomene euryades*, a black and scarlet butterfly rarely found in Trinidad. Thanks to the resultant healthy young adults their basic patterns of courtship and social behavior were unravelled. These patterns are of particular interest for comparison with those of *melpomene's* common cousin, *Heliconius erato hydara*. The two species are world-famous examples of Mullerian mimicry, both being protected from predators by their unpleasant odor and taste; experienced birds and lizards are apparently warned off by the badge of vivid colors.

Since the two species are of identical color and pattern, feed and fly together and respond in the first stages of courtship to each other's red wing bands and special wing motions, the mechanisms which keep the two species from interbreeding are a special puzzle. Differences in the fragrance of the scent scales are probably a deciding factor.

Data were gathered on the growth of the large claw in male fiddler crabs in Trinidad for use in a nearly completed study of their geographical variation in morphology and behavior.

William Beebe worked on problems begun three years ago, such as the relative dominance, variation, rhythm and releasing factors of Arima Valley bird songs and notes. Community studies were continued from last year dealing with over-ripe fruit, bird carcasses, tangerine disease products, wild heliotrope and flowering trees. Emphasis is on succession of appearance, duration and methods of particular activities of the community visitors. In cooperation with Miss Kenedy he undertook the systematic recording of behavior and life histories, together with the operation and efficiency of inedibility and mimicry, in thirteen of the most abundant and representative species of Ctenuchidae.

Dr. Richard E. Tashian, working on a fellowship grant from the Zoological Society, undertook a nesting and behavioral study of the Crested Oropendola or Great Crested Cacique (*Psarocolius decumanus*) at Simla during the first three months of the year. From January 12 to March 29 two nesting sites of these colonial-nesting birds were under observation. One colony was visited weekly, and the other more accessible colony was visited daily for an over-all total of some 320 hours. The periods of parental attentiveness and inattentiveness at the nests during the nesting phases of incubation, brooding and feeding were recorded. In this manner the frequency of visitation and per cent. of time spent at the nest were determined for the various phases. In addition, such factors as the display patterns and vocalizations of the males, respective roles of the sexes and parasitism by cowbirds were noted. Motion pictures of the male displays were taken and analyzed.

Dr. Tashian also undertook studies on climatic adaptation in cold-blooded animals. The respiratory metabolism of certain tropical amphibians (Anura) and Crustacea were tested at different temperature levels and compared with related forms from higher latitudes. In collaboration with G. Carleton Ray of the Zoology Department of Columbia University, comparisons were made with Alaskan and Californian Anura. An extensive investigation was made of the geographic variation in the oxygen consumption, temperature coefficient and tolerance to low temperature of the fiddler crab, *Uca pugnax*. The project was initiated with material collected in Trinidad and continued at several temperate and subtropical localities in order that representative populations of this widely distributed species could be tested. These localities and associated laboratories were: Jamaica Bay, N. Y.—zoological laboratories, Columbia University; Beaufort, N. C.—Duke Univ. Marine Laboratory; and Florida and the

Bahamas—Lerner Marine Laboratory, Bimini, Bahamas. All of these studies have been completed and are awaiting publication in *Zoologica*.

PART II. FIFTY-FOURTH EXPEDITION. This was a four months' trip of the Department to Europe and the Far East, with several objects in view.

PERSONNEL. Three members of the Department took part in this expedition. Miss Kenedy spent two months studying the Ctenuchidae in various European museums. Miss Crane was on the first lap of her five-year grant from the National Science Foundation, to study fiddler crabs. Dr. Beebe concentrated on the present conditions of life of various species of pheasants, and began a comparison of the birds of Singapore with those of Trinidad.

Redfield Vose sponsored Dr. Beebe's portion of the trip and, together with his assistant, Polly Evans, accompanied the party. Mrs. Laura von Meiss joined the group at Naples for two months.

ITINERARY. The expedition began in New York and made the following stops: Naples, Port Said, Suez, Aden, Karachi, Bombay, Colombo and Singapore. From here trips were made by various members of the party to Calcutta, Darjeeling, Bangkok, Penang, Borneo and Afghanistan.

ANIMALS COLLECTED FOR THE ZOOLOGICAL PARK. Ten Flying Lizards (*Draco volans*, *D. quinquemaculatus* and *D. melanopogon*) and two Flying Snakes (*Chrysopelea ornata*) were flown to New York from Singapore, via San Francisco, and arrived safely.

SCIENTIFIC ACTIVITIES. Miss Kenedy left the expedition at Naples and went on to England to study and photograph the type specimens of certain neotropical ctenuchid moths. The resultant notes and photographs of more than 200 types will be used both in Mr. Fleming's present taxonomic work on the Ctenuchidae and in our future field work with this group of moths in Trinidad.

The greater part of her time was spent in London at the British Museum (Natural History) where most of the desired types are deposited. Others studied were those in the private collection of W. J. Kaye in Guildford, Surrey, and at the Hope Department of Entomology, University Museum, Oxford.

On the way to London, university institutes of zoology and civic museums of natural history were visited in Florence, Genoa, Milan and Turin, to examine their collections of Lepidoptera and to learn the location, extent and condition of ocypodid crab collections, the latter information desired by Miss Crane for future study. In Turin arrangements were completed for the loan to Miss Crane of a valuable

collection of fiddler crabs, which were brought to our New York Laboratory by Miss Kenedy at the conclusion of her two-months' trip.

For Miss Crane, the trip yielded two major results, both of which were primary objects. First, data were accumulated for comparison of behavior in many species and genera under natural conditions. Eleven out of the approximately fifteen genera in the entire family were observed, photographed and collected. Of the eleven, display was recorded in nine. In four of these, display was reported for the first time; in none of the species had it been more than casually recorded before. Altogether, 32 species were taken, of which almost two-thirds were displaying in one part or another of the visited portions of their ranges. In *Uca*, the largest genus, nine species were studied and displays recorded in all except one. More than 3,000 feet of color motion picture film were secured of feeding, defense behavior, display and digging; almost all the species observed are included in the films, and about a dozen species in rather full detail.

The second result concerned the determination of primitive patterns of display. For example, in the Singapore region three species of *Uca* showed exceedingly simple patterns which gave excellent clues as to the probable origin of this behavior. In addition, from morphology alone the phylogenetic position of these species within the genus had appeared exceedingly puzzling; with the evidence from display behavior, phylogenetic relations in the genus as a whole are becoming clear.

Encouraging progress was also made in other general aspects of the problem, including particularly the subjects of species barriers in sympatric species, degree of behavior differences between subspecies, comparison of behavior in populations of widely ranging species, evolution of territorial behavior and evidences of primitive social organization.

About 1,500 specimens were preserved and brought back, along with collections loaned by the Raffles Museum of Singapore for morphological study in New York. Side trips were made to Johore, Malacca, Negri Sembilan and Penang in Malaya and to Kuching and Santobong in Sarawak. Field work on the crabs was also carried out en route, at Suez, Aden, Karachi, Bombay and Colombo.

Dr. Beebe concerned himself with two general interests. First was the gathering of all possible data relating to the present condition of oriental pheasants. This was for comparison with the same object undertaken forty-five years ago when he last visited the Orient and wrote the "Monograph of the Pheasants." Today it is necessary to accomplish such a comparison chiefly by correspondence, owing to political disturbance. Considerable information was thus gained.

Another object was a comparison of the birds of Singapore with

those of Trinidad. This was pursued throughout our stay of two months.

LECTURES AND EXHIBITS. Dr. Beebe and Miss Crane spoke to the Malayan Nature Society at the University of Malaya and showed motion pictures. Our motion pictures were also shown to the High Commissioner for southeast Asia, the Hon. Malcolm Macdonald, and to Mr. and Mrs. Loke Wan Tho in Singapore. Miss Crane spoke over Radio Sarawak on the habits of crabs. Miss Kenedy gave a talk to the Science Club of the College of New Rochelle on the work of the Department.

The exhibit of Jungle Dangers and methods of meeting them was continued into its thirteenth year. This was initiated in the Heads and Horns Building in the Zoological Park, in 1943, and ever since has proved to be of constant interest.

An elaborate display of the Department's paintings and of Dr. Beebe's books was made at the Colony Club in New York and at the Seattle Art Museum, under the direction of Mrs. Sherman P. Haight.

CONTRIBUTIONS, 1955.

- 952. Two Little-known Selective Insect Attractants. William Beebe. *Zoologica*, Vol. 40, No. 2, pp. 27-32.
- 953. Polymorphism in Reared Broods of *Heliconius* Butterflies from Surinam and Trinidad. William Beebe. *Zoologica*, Vol. 40, No. 13, pp. 139-143.
- 954. Annual Report of the Department of Tropical Research for 1954. William Beebe. p. 38-41.
- 955. Adventuring with Beebe. William Beebe. Duell, Sloan and Pearce, pp. 1-283.
- 956. *Mina aventyr i djungler och tropiska hav*. William Beebe. Natur och Kultur, Stockholm, pp. 1-162.
- 957. *Storstadens djurvarld*. William Beebe. Natur och Kultur, Stockholm, pp. 1-134.
- 958. A Fish Story from Trinidad. Konrad Lorenz. Trinidad Guardian.
- 959. A Summer In Asia. William Beebe. *Animal Kingdom*, Vol. 58, No. 3, pp. 89-90.
- 960. Newsletter from Karachi. William Beebe. *Animal Kingdom*, Vol. 58, No. 5, pp. 135-136.
- 961. Zoologist visits Singapore. Singapore Straits Times.
- 962. Zoo-goer in Asia. William Beebe. *Animal Kingdom*, Vol. 58, No. 6, pp. 182-186.
- 963. Imaginal Behavior of a Trinidad Butterfly, *Heliconius erato hydara* Hewitson, with Special Reference to the Social Use of Color. Jocelyn Crane. *Zoologica*, Vol. 40, No. 16, pp. 167-196.

MEMBERSHIP

DONALD T. CARLISLE, *Membership Chairman*

LIKE THE WHITE QUEEN, Membership has to run fast to stay in the same place and twice as fast if it wants to get anywhere. Thus, although 293 new members were added to our rolls through the proselytizing of present members, acquaintanceships with staff officers and membership promotion mailings, we lost 289 through deaths, resignations and failures to pay dues—a net gain of only four memberships.

Revenue from membership dues for 1955 was \$45,225, a very slight decrease from the 1954 total. But the costs of running the Membership Department have also been decreased by a concentration of all membership functions, except the creation of membership promotion material, in the office at the Zoological Park. Thus a substantial additional amount becomes available for general Society purposes and the possibility of an extension of services to members can be contemplated. Efforts in this direction should certainly decrease the number of members who resign or drop their memberships.

The two main events for members in the year—the mid-town meetings on January 25 and January 26 at the Hunter College Auditorium and the Spring Garden Party at the Zoo on June 2—were enthusiastically attended and the programs offered were applauded generously. For the Spring Garden Party, the Society asked its members to inform it if they planned to attend and the members were asked to bring no more than 2 guests. About 30% of our members responded and 1,300 members, their children and guests came to the party. The policy of limiting the number of guests at the Spring Garden Party made for an intimate Society family feeling and the affair was so successful that the same policy seems indicated for the future.

The Membership Promotion Committee formed in 1954 continued to function under the able leadership of President Osborn. It analysed ways and means to promote greater usage of the Zoo by Society members and made plans to keep members closely informed of all Society and Zoo activities through the excellent medium of our bi-monthly magazine *Animal Kingdom*, newspaper stories and postcards to members about topical events in the Zoo.

THE CONSERVATION FOUNDATION

RESearch. *Marine Resources.* Our prolonged study of marine resources by Dr. Lionel A. Walford of the U. S. Fish and Wildlife Service is nearly completed. The study deals with what is presently known about marine resources and their uses and will indicate where substantial opportunities lie for further research in order to increase the availability of resources from the sea.

Water Law. A study of the need for revision of water laws in the eastern states, as a result of the vastly increased demands for water, includes legal analyses of cases and statutes in four representative eastern states and extended conferences with state administrative authorities, planning bodies and water users. In this effort we are receiving enthusiastic cooperation from federal and state administrators and legislators. The Council of State Governments is also providing assistance.

This project is now completing individual legal and economic studies and planning for a symposium in the early fall of 1956. The aim of the symposium will be to review present knowledge and to consider ways of evaluating water uses and developing the law in this field.

Basic Data Regarding Our Water Resources. An intensive analysis of basic information essential to the sound development of our nation's water resources is now actively under way. How best can we, for instance, measure the various phases of the hydraulic cycle, such as rainfall, streamflow and evaporation, in order to deal with problems of "too much" and "too little" water? Existing hydrologic data and practices will be examined and measured against needs that are revealed by case studies of water projects now in operation. The severe economic losses that frequently result from lack of adequate information will be documented.

This analysis will be carried out by Walter Langbein of the United States Geological Survey and W. G. Hoyt, authority on water problems.

An Inquiry into Crop Yield Trends. In the past twenty years the per-acre output of many of our leading crops has risen steadily. Obviously there are various causes, such as breeding of better varieties, improved land management and soil conservation, greater application of fertilizer, and crop rotation. No one has tried to measure how each of these factors, or several of them in combination,

have contributed to the greater productivity of our land. This inquiry will be conducted by a team of agricultural economists under the direction of Professors Theodore A. Schultz and D. Gale Johnson of the University of Chicago. One of the purposes of the study will also be to determine what is happening to the quality of our soils and crops as agriculture undergoes intensification.

Protection of Wildlife. Dr. Helmut K. Buechner will complete within the coming year the study of Bighorn Sheep he is conducting jointly for the Foundation and the New York Zoological Society. This study deals with the range of ecological requirements of Bighorns from the Canadian to the Mexican border and should contribute to a clearer understanding of the values of this wonderful animal and of ways to insure its long-term protection.

Dr. Carl Koford will shortly complete his study of the lesser fauna of the western plains, with particular emphasis on the relationship of the Prairie Dog to the grasslands and related animal and plant life.

Population Studies. Judith Blake Davis and J. Mayone Stycos are completing a report on their extended study of family attitudes among the native population of Jamaica. The introduction to the forthcoming report states: "Jamaica and many other underdeveloped areas are finding that economic advances, often made with much effort, do not result in a commensurate rise in the level of living but tend to be consumed by evergrowing additions to the labor force. Whereas a great deal of scientific research has been devoted to remedying excessive mortality and to improving economic conditions in such countries, only recently has attention been turning to questions of fertility." It is expected that this report will be ready for publication in 1956.

George W. Roberts' study, "*Population in Jamaica*," is now complete and will be published by the Cambridge University Press in 1956.

EDUCATION. Teaching in Colleges. The study by Dr. Charles E. Lively, assisted by Dr. Jack Preiss, on the quantity and quality of conservation education in the colleges of the United States will be published in the fall of 1956.

Teaching in Schools. Preparation of the first of a series of books for high school teachers on better methods of teaching science through use of conservation materials is under way. Mrs. Martha E. Munzer, senior chemistry teacher at the Fieldston School, has begun with a text on the teaching of chemistry through conservation. On the recommendation of our Educational Advisory Committee, the scope of this study is now being enlarged to cover all science teaching. Dr. Paul F.

Brandwein has agreed to serve as co-author of the enlarged volume, which should be ready for publication early in 1957.

Graduate Training. Progress continues in our study of the purpose and uses of resource training at the graduate level in several universities. The aim of this project is threefold: to determine what are the specific areas within business and industry that need personnel broadly trained in interrelated resource management; to bring to business and industry wider recognition of the scope and value of resource training; finally, to encourage the universities to qualify their students to fill specific existing needs while giving them broad knowledge of resources and environmental relationships.

Television. The preparation of twenty-six fifteen-minute television films in association with Thomas Craven Productions, based on footage taken from our earlier films photographed by John H. Storer, has been completed. Narration is by Tex Antoine, well-known commentator for the National Broadcasting Company. The series is being distributed in the United States and Canada by RCA Package Productions.

Radio. Beginning February 15, 1956, the Foundation, in association with the National Broadcasting Company, will present a nationwide series of thirteen radio programs emphasizing industrial, commercial and personal achievements in the field of conservation. This series, entitled "Today and Tomorrow," will be narrated by James Cagney. In order to gain for this radio series the widest possible consequences throughout the country, we have prepared a discussion guide outlining topics and areas for adult discussion of conservation of natural resources.

Films. Stimulated by the purchase made by Standard Oil Company of New Jersey of twelve sets of our film, "Yours is the Land," with Spanish and Portuguese sound tracks, our films are now beginning to penetrate the South American market. Favorable comments have been received from Brazil, Argentina, Uruguay, Chile and Colombia.

GENERAL. Cooperation with the Population Council. We have welcomed the opportunity of having working associations with The Population Council, Inc., an organization created in 1952. Fairfield Osborn is serving as a member of its *ad hoc* committee, and Robert G. Snider is serving as Secretary.

Alaska Retrospect. The chief economist on the staff of the Governor of Alaska has advised the Foundation that the new territorial law creating a Resource Development Board, enacted by the legislature of Alaska in the spring of 1955, was based on many of the recommendations contained in the "Model State Conservation Administra-

tion Act" prepared by Professor William F. Schulz, Jr., under our sponsorship.

Dr. A. Starker Leopold, who, with Dr. F. Fraser Darling, prepared the volume entitled "Wildlife in Alaska," a Foundation publication, writes that the Fish and Wildlife Service in Alaska has modified some of its major policies of big game management and is adopting many of the recommendations of this study.

Soil Erosion Survey. The "Soil Erosion Survey of Latin America," which was published in the *Journal of Soil and Water Conservation* in 1954, has now been translated into Spanish. The Food and Agriculture Organization of the United Nations has contracted with us to purchase and distribute throughout Latin America 1,500 copies of the translated document.

Staff Changes. Dr. Paul F. Brandwein has accepted appointment as educational consultant and will undertake supervision of educational programs as they become operative. Kenneth V. Anderson has accepted appointment as Director of Industry Relations and is preparing programs of collaboration with industrial corporations, including the development of community conservation activities.

Public and Personal Relations. Dr. E. Max Nicholson, Director-General of the British Nature Conservancy, visited the United States in May at the invitation of the New York Zoological Society, the Conservation Foundation, the Wildlife Management Institute and the American Committee for International Wildlife Protection. After attending introductory dinners in New York and Washington, Dr. Nicholson visited a number of national parks and forests and wildlife refuges, governmental research stations and state and local watershed developments and reserves.

President Osborn received the honorary degree of Doctor of Science from New York University at its June Commencement, with a citation that read in part: "Leading world figure in the crucial effort to arrest the headlong dissipation of the earth's natural resources, and author of key treatises of the utmost significance on the subject, devoting his life unselfishly and unsparingly to a vast educational effort toward protection against prodigal waste of mankind's basic patrimony, he is every inch a conservationist—and there are a good many inches—and we gladly present him for the doctorate of Science."

Dr. Osborn and Samuel H. Ordway, Jr., attended a six-day international conference at Princeton, N. J., under the auspices of the Wenner-Gren Foundation for Anthropological Research on the subject "Man's Role in Changing the Face of the Earth."

At the invitation of the Natural Resources Council of America, Dr.

Osborn has written a chapter dealing with natural resources and population problems for a new book to be published under the sponsorship of the Council. He has also been invited to write the foreword for the world atlas of national parks and nature reserves to be published shortly by the International Union for the Protection of Nature.

A matter of potential importance to our Educational Program is the fact that Dr. Osborn is serving on the Board of Trustees of the Metropolitan Educational Television Association, Inc. META has now reached a stage in its development at which it is about to undertake construction of a studio for production of programs for release through commercial stations.

George E. Brewer, Jr., became a member of the National Advisory Committee of the Joint Council on Economic Education.

President Osborn has been attending a number of meetings in Washington as a member of the National Research Council special committee surveying opportunities for basic research in the field of natural resources. In September he went to Montreal to address the joint meeting of the American Society of Planning Officials and the Community Planning Association of Canada on the subject of conservation of resources and, more particularly, resource-planning in connection with urban and industrial development.

JACKSON HOLE BIOLOGICAL RESEARCH STATION

SPONSORED BY THE NEW YORK ZOOLOGICAL SOCIETY
AND THE UNIVERSITY OF WYOMING

L. FLOYD CLARKE, *Director*

THE SECOND complete summer of operation under the sponsorship of the New York Zoological Society and the University of Wyoming was a highly successful one. The enthusiastic and cooperative attitude of all the research workers at the Station was indeed gratifying. The sponsoring institutions look with pride on the activities of the Station.

RESEARCH PROJECTS. The following research projects were successfully carried out at the Station during the summer of 1955. Grants totaling \$1,500 from the New York Zoological Society and \$2,500 from the National Science Foundation were of great assistance in carrying out these projects. Some were a continuation from the preceding summer and others were newly initiated, as indicated below.

Margaret Altmann—A study of social behavior patterns in Moose of Wyoming. This is a long-range project supported in part by the National Science Foundation expanding upon research carried out for many years on social behavior of big game animals.

Kenneth B. Armitage—Ecology and social behavior of the Yellow-bellied Marmot. Initiated this summer, partially supported by the New York Zoological Society. Will be continued next summer.

George T. Baxter and L. Floyd Clarke—Study of effects of pollution on Swan Lake. Supported by the University of Wyoming and the New York Zoological Society. Was begun last summer and will be continued next year.

Alan Beetle—Sagebrush-grass competition. A long-range project which has been supported by the University of Wyoming and will continue in expanded form under sponsorship of the Wyoming Natural Resources Board.

Dorothy Beetle—Land and freshwater molluscs of Jackson Hole. Second summer.

Garth Kennington—Metabolic differences associated with the altitude. Initiated under grant from the New York Zoological Society. To be continued next summer.

Charles LaMotte—An investigation of modes of reproduction in grasses.

James Opsahl—Population densities of small mammals in representative vegetation types and procurement of experimental Red-backed Mice. This completes the field research activity for the Ph.D. degree; however, a continuation of related research is anticipated.

James Ruos—Ecology and social behavior of the Mule Deer.

Gerald Scherba—A comparison of ant communities at increasing altitudes. Initiated under a grant from the New York Zoological Society and will be continued next year.

W. G. Solheim—Swan Lake research and flora of Jackson Hole area. Supported by the University of Wyoming.

Charles Thornton—Influence of nerves on the regeneration and regression of limbs in amphibia. Initiated in 1954; supported by a grant from the National Science Foundation and will be continued next year.

Olwen Williams—The food habits of small mammals. Initiated this year and will be continued next summer.

The fine cooperation of the Grand Teton National Park and Forest Service continued. Park Service personnel utilized the facilities of the Station and received scientific counsel from Station personnel. The Station was honored by visits of many eminent biologists. Two of these were Dr. Paul Pirlot and family from the Institute of Scientific Research in Central Africa, Belgian Congo; and Dr. B. H. Willier and family. Dr. Willier is head of the Division of Biological Sciences, Johns Hopkins University.

SEMINARS. A regular schedule of seminars was held at the Station in which papers were presented either on research work under way by the investigator or subject matter related to the project. The visiting biologists participated in the seminar programs. The seminars proved to be very valuable to the investigators because of the suggestions and criticisms which they received. Slide projection sessions were held many times during the summer for the enjoyment of everyone in the Station community. The congenial atmosphere at the Station was enhanced by picnics, campfire sings and other social gatherings in which refreshments were served and in which everyone participated.

LIBRARY. Library books and periodicals were reorganized to make them more readily accessible. Current periodicals were kept on open shelves. Reprints of publications and reports of scientific investigations at the Station were added to the library files.

PHYSICAL FACILITIES. Living accommodations were expanded and laboratory facilities improved. Improvements were also made in the plumbing, propane fuel distribution system and electricity, including the replacement of a local generating plant by REA.

PROSPECTS FOR 1956. Applications for 1956 are far more than can be accommodated with present facilities. This great interest is gratifying, but a decision must be made concerning the degree of expansion to be undertaken.

TREASURER'S REPORTS
For the Year Ended December 31, 1955

DAVID H. MCALPIN, *Treasurer*
30 East 40th Street
New York 16, N. Y.

NEW YORK ZOOLOGICAL SOCIETY BALANCE SHEET

December 31, 1955

ASSETS

Cash in banks and on hand.....		\$ 292,436.99
Investments (approximate market value \$8,318,200)-(note 4).....		6,241,810.76
Receiveable from the City of New York:		
Appropriations for Zoological Park maintenance—		
calendar year 1955	\$699,222.44	
Less amount received	617,345.47	81,876.97
Other receivables		10,446.34
Park facilities' inventories.....		24,231.07
Park facilities' assets, less depreciation (note 1):		
Improvements to land and buildings in Zoological Park.....	187,381.49	
Equipment and miscellaneous items.....	80,846.17	268,227.66
Prepaid expenses and deferred charges.....		10,199.36
National collection of heads and horns, art gallery, library		
and sundry items		1.00
Collection of living animals.....		1.00
Jackson Hole research station buildings.....		1.00
Simla tropical research station.....		1.00
		<u>6,929,233.15</u>
Aquarium Fund assets, per contra (note 4):		
Cash	9,835.80	
Investments (approximate market value \$400,000)-(
note 4)	413,144.35	
Appropriation receiveable from Society	119,000.00	
Receiveable from the City of New York	687.12	
		<u>542,667.27</u>
Less:		
Commitment to the City of New York for the construction		
cost of the first stage of the aquarium.....		\$740,400.00
Less construction work in progress.....		499,583.60
		<u>240,816.40</u>

Due to the City of New York for construction

work in progress

Commitment for preparatory cost of the

first stage of the aquarium

Less preparatory cost in progress

\$87,500.00
687.12

86,812.88

497,702.88

44,964.39

\$6,974,197.54

LIABILITIES

Accounts payable and accrued expenses

\$ 76,406.26
119,000.00

Appropriation payable to Aquarium Fund

Fund reserves:

General Funds

\$4,558,311.41

Endowment Funds

1,453,396.97

Special Purpose Funds

270,335.01

Reserve for Educational and Other Purposes

13,976.96

Park Facilities Operating Fund

437,806.54

6,733,826.89

Aquarium Fund, per contra:

2,500.00

Fund for construction of new penguin exhibit

42,464.39

Reserve

44,964.39

\$6,974,197.54

NOTES

- (1) Park facilities' assets are subject to an agreement with the City of New York, and the net income from park facilities' operations may be used only for the purchase of animals and the improvement of Zoological Park.
- (2) The balance sheet does not include the assets and liabilities of The Pension Fund.
- (3) Except for income from investments, which is accounted for in the year received, the balance sheet is prepared on an accrual basis.
- (4) The New York Zoological Society and the City of New York have entered into an agreement to construct an aquarium, as funds become available, at an estimated total cost of \$7,100,000.00 to be shared equally by both parties. Contracts have been awarded for the first stage of construction, which will cost approximately \$1,480,800.00. The Society has deposited with the City of New York U. S. Treasury bonds and notes of the par value of \$411,000.00 as a guarantee for the balance, \$410,890.00, of its share of construction costs of \$740,400.00. In addition, preparatory costs are estimated at \$175,000.00 and the Society has provided \$87,500.00 for its share of the cost.

FUND RESERVES

December 31, 1955

General:

General Working Fund	\$ 52,356.78	
Anna M. Harkness Fund	1,105,499.29	
Sage Fund	686,220.46	
Mary Clark Thompson Fund	2,714,234.88	
	<u>4,558,311.41</u>	

Endowment:

George F. Baker Fund	\$ 126,525.98	
Mary Thurston Cockroft Fund	34,204.87	
Robert Jaffray Fund	16,129.89	
William Pyle Philips Fund	11,899.92	
Rockefeller Fund	1,169,721.87	
Edward P. Casey Fund	94,914.44	1,453,396.97
	<u>1,453,396.97</u>	

Special Purpose:

Cadwalader Animal Fund	23,064.93	
Conservation Account	19,486.76	
Damon Fund	22,280.80	
Grant Fund for the Protection of Wildlife ...	28,600.18	
Jacob H. Schiff Fund	123,576.86	
Stokes Bird Fund	5,809.13	
Miscellaneous	47,516.35	270,335.01
	<u>270,335.01</u>	

Reserve for Educational and Other Purposes	13,976.96	
Park Facilities Operating Fund	437,806.54	
	<u>451,783.50</u>	

6,733,826.89

Aquarium Fund	44,964.39	
	<u>44,964.39</u>	

\$6,778,791.28

See accompanying notes to financial statements.

PERMANENT WILD LIFE PROTECTION FUND

Cash	\$ 438.75	
Investments (approximate market value \$180,500.)	138,004.65	
Principal Fund at December 31, 1955	<u>\$138,443.40</u>	

SUMMARY OF CHANGES IN FUND RESERVES, OTHER THAN PARK FACILITIES AND AQUARIUM FUNDS

Year ended December 31, 1955

GENERAL FUNDS

Balance at December 31, 1954	\$4,043,668.73
Receipts	529,608.93
	<u>4,573,277.66</u>
Expenditures	14,966.25
Balance at December 31, 1955	<u>\$4,558,311.41</u>

ENDOWMENT FUNDS

Balance at December 31, 1954	1,209,261.19
Receipts	244,135.78
Balance at December 31, 1955	<u>\$1,453,396.97</u>

SPECIAL PURPOSE FUNDS

Balance at December 31, 1954	272,303.01
Receipts	\$113,661.36
Transfers	<u>73,000.00</u>
	458,964.37
Expenditures	188,629.36
Balance at December 31, 1955	<u>\$ 270,335.01</u>

RESERVE FOR EDUCATIONAL AND OTHER PURPOSES

Balance at December 31, 1954	32,893.11
Appropriation from General Income Account	<u>5,000.00</u>
	37,893.11
Expenditures	23,916.15
Balance at December 31, 1955	<u>\$ 13,976.96</u>

See accompanying notes to financial statements.

AQUARIUM FUND

Year ended December 31, 1955

Balance at December 31, 1954		\$ 91,291.94
Add:		
Gifts	\$ 32,713.50	
Income from investments	10,204.36	
Refund of travel advances	26.82	42,944.68
		<hr/>
		134,236.62
Deduct:		
Cost of erecting aquarium sign	850.00	
Net loss on sales of securities	922.23	1,772.23
		<hr/>
		132,464.39
Deduct commitment for preparatory cost of the first stage of the aquarium		87,500.00
		<hr/>
Balance at December 31, 1955		\$ 44,964.39
		<hr/> <hr/>
See accompanying notes to financial statements.		

GENERAL WORKING FUND

Year ended December 31, 1955

Balance at December 31, 1954	\$	31,632.56
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Add:

Gifts	\$	19,120.64	
Life memberships		4,475.00	
Conservation film royalties		7,894.70	
Pro-rata share of net profit on sales and redemption of investments		3,892.60	
Balance from general income account		307.53	35,690.47
			<u>67,323.03</u>

Deduct payments:

Production of publications on the care and exhibition of wild animals in captivity.	3,500.00	
Fund raising and membership promotion expenses	7,834.13	
Operating costs of Department of Tropical Research at Simla, Trinidad, B.W.I., for the year ending April 30, 1956.	3,000.00	
Operating expenses and research at Jackson Hole Research Station.	500.00	
Miscellaneous	132.12	14,966.25
		<u>14,966.25</u>

Balance at December 31, 1955	\$	<u>52,356.78</u>
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See accompanying notes to financial statements.

GENERAL INCOME ACCOUNT

Year ended December 31, 1955

Income:

Income from investments	\$291,879.05
Annual dues	45,225.00
Sales of publications	4,221.23
Miscellaneous income	7,872.99
Total income	<u>\$349,198.27</u>

Expenses:

Actuarial fee	888.00
Annual report	1,438.45
Aquarium research	3,282.06
Audit fee	2,200.00
Conservation	20,000.00
Custodian fees	3,003.00
Educational activities	11,966.34
Employee welfare	2,668.89
Executive office	22,503.45
Group life insurance	4,973.00
Hospitalization	5,730.12
Insurance	7,379.57
Legal fees	4,000.00
Library	1,053.91
Members—meetings and services	14,651.76
Membership promotion and fund raising	11,440.00

Pensions:

Fund contribution—150% of employee contributions	\$ 23,293.09	
Auxiliary payments	<u>6,304.48</u>	29,597.57
Photography—salaries and supplies		9,231.59
Publication expenses:		
Salaries and other expenses	18,343.76	
“Animal Kingdom”	13,855.15	
“Zoologica”	<u>7,669.13</u>	39,868.04
Reception expense		2,844.05
Social security taxes		1,284.48
Traveling expense		4,853.70
Tropical research		14,300.00
Miscellaneous expense		<u>8,569.84</u>
		227,727.82

Appropriation for reserve for educational and other purposes		5,000.00
Park maintenance expenditures for the year 1955	815,385.36	
Less amount provided by New York City	<u>699,222.44</u>	
Amount expended by New York Zoological Society		116,162.92
Balance carried to General Working Fund		<u>307.53</u>
		<u>\$349,198.27</u>

See accompanying notes to financial statements.

PARK FACILITIES

STATEMENT OF INCOME AND EXPENSE AND OPERATING FUND

Year ended December 31, 1955

Balance of Park Facilities Operating Fund at December 31, 1954			\$361,845.30
Add:			
Receipts from sales at restaurants, stands, etc. and from services	\$999,993.14		
Less:			
Cost of merchandise sold	\$290,764.83		
Salaries and commissions	395,671.09		
Operating and maintenance supplies	101,648.04		
Depreciation	25,898.39		
Comprehensive public liability insurance	10,598.93		
Other operating and general expenses	26,450.62	851,031.90	
Net income from sales at restaurants, stands, etc. and from services (note 1)		148,961.24	
			510,806.54
Deduct:			
Appropriations for park improvements	55,000.00		
Appropriations for the purchase of animals	18,000.00		
			73,000.00
Balance of Park Facilities Operating Fund at December 31, 1955			\$437,806.54
See accompanying notes to financial statements.			

GIFTS, GRANTS AND LEGACIES RECEIVED

Year ended December 31, 1955

General Working Fund:

George F. Baker, Jr. Trust	\$ 1,003.39
Childs Frick	5,428.50
Dr. Henry Clay Frick II	2,730.00
Mrs. Magda Merck Sheldon	1,970.25
Mrs. Paul Moore	1,000.00
Anne Phipps	558.00
Howard Phipps, Jr.	1,058.00
John H. Phipps	2,350.00
John Eugene Phipps	500.00
Estate of Sarah Roache	24.50
Rockefeller Brothers Fund, Inc.	2,500.00

19,120.64

Art Fund:

Laurance S. Rockefeller	10,625.00
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Bermuda Biological Station for Research:

Childs Frick	1,480.50
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Bermuda Aquarium and Museum:

Childs Frick	1,480.50
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Blickman Film Fund:

Saul Blickman	6,400.00
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Cancer Research:

National Cancer Institute	13,960.00
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Edward P. Casey Fund:

Legacy	94,914.44
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Mary Thurston Cockroft Fund:

Final distribution of legacy	336.56
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Conservation Foundation:

Childs Frick	13,818.00
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De Forest Grant Scientific Research Fund:

De Forest Grant	3,560.00
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Ocypodid Crab Research:

National Science Foundation	5,600.00
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Special Fund for Construction of Animal Nursery:

Anonymous	\$1,000.00
Mrs. Meyer Samson in name of Lise and Ellen Luborsky	15.00

1,015.00

Carried forward \$172,310.64

Brought forward			172,310.64
Special Projects:			
Mrs. Edward Ballard	\$ 75.00		
Roger Benjamin Fund, Inc.	50.00		
Mr. & Mrs. Joseph Campbell	25.00		
Chantecler Corporation	50.00		
Miss Ruth A. Child	100.00		
Percy Chubb II	100.00		
George and Margarita Delacorte	100.00		
J. I. Foundation, Inc.	100.00		
Mrs. Bayard James	25.00		
E. J. Lowe	30.00		
The Lyric Foundation, Inc.	25.00		
Allan J. McIntosh	25.00		
Aaron E. Norman Fund	100.00		
Polly and Gilbert Kahn Foundation	250.00		
Hubert E. and Anne E. Rogers Foundation, Inc.	100.00		
Katherine S. Rosin	100.00		
Harry Scherman	250.00		
Joseph A. Thomas	25.00		
Time, Incorporated	250.00		
De Witt Wallace	200.00		
Lila Bell Acheson Wallace	200.00		
Mrs. Anne Van Gamble	50.00		
Others (23)	185.50		
For Department of Tropical Research:			
Dr. Harold E. Anthony	\$ 50.00		
Mr. & Mrs. Wilbur Downs	25.00		
Mrs. Mabel S. Ingalls	1,000.00	1,075.00	3,490.50
Aquarium Fund:			
The Corporation Trust	1,000.00		
C. Suydam Cutting	2,497.00		
John Elliott	100.00		
Alfred Ely	1,000.00		
Marshall Field	5,000.00		
Childs Frick	5,428.50		
Dr. Henry Clay Frick	2,730.00		
Warren Kinney	2,000.00		
Mr. & Mrs. David McAlpin	1,010.00		
Miss Anne Phipps	2,046.00		
John Eugene Phipps	500.00		
John H. Phipps	2,350.00		
The Thorne Foundation	5,000.00		
William J. Ward Trust	1,000.00		
J. Watson Webb	1,000.00		
Others (5)	52.00		
		32,713.50	
		<u>\$208,514.64</u>	

THE PENSION FUND

(Founded by Andrew Carnegie)

STATEMENT OF CASH TRANSACTIONS

Year ended December 31, 1955

Balance at December 31, 1954:

Investments (approximate market value \$1,385,500.00)	\$1,073,763.60
Accrued interest purchased	41.35
Uninvested balance of cash	11,285.14
	<hr/>
	1,085,090.09

Receipts:

Income from investments:

Interest	\$ 15,554.28
Dividends	35,403.76
	<hr/>
	50,958.04

Contributions by employees 18,803.25

Contributions by New York

Zoological Society (150% of contributions by employees):	
Society	\$23,283.12
Facilities	4,921.88
	<hr/>
	28,205.00

Special contributions	148.56	98,114.85
	<hr/>	<hr/>
		1,183,204.94

Expenditures:

Refunds on account of resignations	5,508.01
Refunds to heirs of deceased employees	3,072.07
Pension disbursements	31,184.57
	<hr/>
	39,764.65

	1,143,440.29
Net profit on sale of securities	90,781.89
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Balance at December 31, 1955:

Investments (approximate market value \$1,555,100.00)	1,220,117.28
Accrued interest purchased	244.46
Uninvested balance of cash	13,860.44
	<hr/>
	\$1,234,222.18
	<hr/>

PEAT, MARWICK, MITCHELL & CO.

CERTIFIED PUBLIC ACCOUNTANTS

Seventy Pine Street

New York 5, N. Y.

ACCOUNTANTS' REPORT

THE BOARD OF TRUSTEES

New York Zoological Society:

We have examined the balance sheet of the New York Zoological Society as of December 31, 1955 and statements of the transactions of the various funds of the Society and of The Pension Fund for the year then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

We made a test-check of the subscriptions, donations and dues reported as received and of the income from investments, and found such items to be properly recorded. The securities recorded in the various funds were in agreement with schedules and other supplementary data prepared by the custodians of such securities held for the account of the Society. Bank balances were confirmed directly to us by the depositaries and were reconciled with the respective cash balances recorded in the accounts. We examined approved vouchers and paid checks for a number of representative expenditures.

Park facilities' assets are carried in the accounts at net depreciated book amounts as of December 31, 1940 plus subsequent additions at cost, less retirements. Provision for depreciation from January 1, 1941 to December 31, 1955 has been computed on the resulting book balances.

In our opinion, subject to the comments contained in the previous paragraph, the accompanying balance sheet and statements of transactions of the various funds of the Society present fairly the financial position of the Society at December 31, 1955 on the basis stated therein, and the changes in the funds of the Society for the year then ended, in conformity with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

PEAT, MARWICK, MITCHELL & Co.

New York, N. Y.

February 24, 1956

REPORT OF THE AUDITING COMMITTEE
OF THE
NEW YORK ZOOLOGICAL SOCIETY

TO THE PRESIDENT AND BOARD OF TRUSTEES
OF THE NEW YORK ZOOLOGICAL SOCIETY

Dear Sirs:

We have examined the reports of Peat, Marwick, Mitchell & Co., Certified Public Accountants, on their examination of the balance sheet of the New York Zoological Society as of December 31, 1955, and statements of the transactions of the various funds of the Society and of The Pension Fund for the year then ended. We have noted that their examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as they considered necessary in the circumstances. The balance sheet and statements of transactions of the various funds of the Society present fairly, in our opinion, the financial position of the Society as of December 31, 1955.

We accordingly submit Messrs. Peat, Marwick, Mitchell & Company's reports to you as a satisfactory examination of the balance sheet and statements of the transactions of the various funds of the Society and of The Pension Fund.

Respectfully submitted,

GEORGE F. BAKER, *Chairman*

C. SUYDAM CUTTING

WILLIAM DEFORREST MANICE

J. WATSON WEBB

March 30, 1956

SUMMARY OF EXPENDITURES, 1896 to 1955, New York Zoological Society and the City of New York, on Account of the Development and Maintenance of the Zoological Park and the Aquarium, Including the Purchase of Collections and Also for the Scientific and General Purposes of This Society.

Year	EXPENDED BY THE CITY OF NEW YORK			FROM GATE RECEIPTS		EXPENDED BY THE NEW YORK ZOOLOGICAL SOCIETY									
	Zoological Park Maintenance	Aquarium Maintenance	Bond Issues a/c Park & Aquarium	Construction and Repairs	Purchase of Animals	Zoological Park Development	Aquarium Improvements	Zoological Park Maintenance	Aquarium Maintenance	Purchase of Animals	Aquarium Specimens	Heads and Horns Collection	Pension Fund Contribution	Library and Paintings	Scientific and General Purposes
1896	.....	.....	.....	.....	.....	\$ 4,213.63	.....	.....	.....	.....	.....	.....	.....	.....	.....
1897	.....	.....	.....	.....	.....	6,424.61	.....	.....	.....	.....	.....	.....	.....	.....	\$ 2,903.74
1898	.....	.....	.....	.....	.....	23,597.80	.....	\$ 1,292.16	.....	.....	.....	.....	.....	.....	4,339.20
1899	\$ 30,000.00	.....	.....	.....	.....	145,495.80	.....	7,038.61	.....	\$ 8,540.72	.....	.....	.....	\$ 102.76	3,476.02
1900	40,000.00	.....	\$125,000.00	.....	\$ 2,470.88	34,626.24	.....	6,189.33	.....	3,784.32	.....	.....	.....	88.13	5,601.78
1901	65,000.00	.....	300,000.00	.....	2,998.80	18,348.61	.....	3,714.37	.....	11,652.24	.....	.....	.....	462.20	7,597.16
1902	85,000.00	\$ 5,959.97	250,000.00	.....	4,256.50	5,908.69	.....	2,757.57	.....	20,983.07	.....	.....	.....	224.73	11,068.69
1903	104,965.00	46,453.68	280,000.00	.....	5,912.95	1,038.20	.....	.....	.....	20,361.62	.....	.....	.....	456.03	13,608.10
1904	104,965.00	46,439.72	315,000.00	.....	5,421.90	1,013.87	.....	1,394.37	.....	14,299.61	.....	.....	.....	887.16	15,072.84
1905	134,965.00	44,968.50	275,000.00	.....	6,849.00	144.00	.....	.....	.....	20,643.40	.....	.....	.....	418.10	18,773.90
1906	144,965.00	44,987.71	250,000.00	.....	8,132.35	778.48	.....	.....	.....	14,907.36	.....	.....	.....	319.16	17,961.67
1907	141,558.75	44,183.87	100,000.00	.....	8,248.65	370.72	.....	.....	.....	10,606.03	.....	\$ 892.71	.....	644.05	15,999.68
1908	154,627.00	44,157.27	65,000.00	.....	9,446.40	232.27	.....	.....	.....	4,231.61	.....	735.77	.....	1,313.87	14,693.92
1909	162,325.00	45,971.44	10,000.00	.....	9,992.75	2,860.92	.....	.....	.....	9,734.43	.....	7,340.82	.....	609.56	17,168.95
1910	167,632.00	45,974.86	89,500.00	.....	9,909.90	5,918.35	.....	.....	.....	4,339.25	\$ 973.90	2,036.39	.....	1,021.87	20,627.77
1911	174,632.00	47,560.21	155,000.00	.....	11,611.15	1,155.00	.....	.....	.....	6,659.89	1,191.80	1,615.38	.....	1,221.26	23,409.39
1912	182,365.00	46,597.08	.....	.....	11,838.40	40.00	.....	.....	.....	22,750.18	1,350.03	556.94	.....	1,031.55	32,109.01
1913	191,925.00	47,335.62	29,100.00	.....	12,404.25	218.45	.....	.....	.....	10,665.57	1,850.25	486.00	.....	732.97	32,543.88
1914	200,000.00	46,995.53	.....	\$ 9,237.81	3,831.15	2,175.13	.....	.....	.....	22,590.44	1,792.99	338.73	\$3,333.33	3,541.15	28,246.42
1915	200,000.00	46,991.66	21,425.00	9,175.86	.....	887.88	.....	.....	.....	13,629.41	1,466.64	1,024.91	8,000.00	4,181.24	31,398.08
1916	197,074.35	46,996.43	.....	9,599.81	.....	425.30	.....	.....	.....	13,511.12	2,193.57	1,031.47	8,000.00	1,555.12	38,339.99
1917	199,560.00	46,903.61	.....	3,488.31	7,118.90	1,450.05	.....	11,537.79	.....	10,175.70	1,637.15	18.12	8,000.00	2,869.20	44,262.48
1918	207,586.00	48,630.71	.....	2,642.70	.....	48.12	\$ 3,450.00	1,580.00	\$ 93.61	8,425.92	960.19	18.61	8,000.00	3,559.85	34,125.49
1919	190,000.00	45,000.00	5,000.00	4,917.84	.....	.....	\$ 3,450.00	19,924.00	407.07	13,345.59	1,028.05	88.27	8,000.00	1,442.07	45,599.71
1920	250,098.27	53,971.48	15,000.00	17,438.28	.....	5,007.00	4,095.03	5,141.92	.....	32,761.08	1,654.02	263.86	8,000.00	2,517.64	51,018.20
1921	276,951.01	65,203.12	86,000.00	25,463.77	.....	88,734.92	53,635.02	6,068.17	976.47	27,442.59	2,165.05	2,661.67	8,000.00	4,698.24	55,684.15
1922	264,618.05	63,341.26	25,000.00	17,060.00	.....	50,885.65	16,153.03	10,074.38	3,326.28	43,047.41	3,057.91	7,191.93	8,000.00	1,765.78	58,797.69
1923	262,724.50	57,166.63	.....	18,388.20	.....	5,000.00	.....	19,019.09	3,319.44	24,456.20	1,432.89	1,550.69	8,000.00	3,391.96	58,404.21
1924	262,471.01	57,319.20	7,970.00	16,806.00	.....	.....	28,233.45	28,956.34	8,097.14	11,560.62	2,013.88	942.34	8,000.00	1,938.77	76,559.41
1925	262,808.69	58,324.89	85,000.00	19,974.05	.....	.....	.....	38,793.01	4,380.45	20,843.01	2,609.55	667.78	8,000.00	1,174.24	242,753.89
1926	273,815.12	62,266.20	1,500.00	20,102.90	.....	.....	.....	45,467.10	7,261.21	23,460.04	2,847.35	306.32	8,000.00	562.40	87,915.27
1927	276,855.19	65,216.89	.....	18,960.48	.....	.....	1,395.00	61,968.22	11,656.97	27,545.92	2,861.55	135.00	8,000.00	2,477.37	82,807.54
1928	319,380.50	88,109.12	.....	18,106.25	2,480.06	.....	.....	52,676.35	10,776.84	21,001.88	2,912.97	107.89	8,000.00	1,168.15	88,794.37
1929	338,359.00	71,229.35	100,000.00	21,957.80	13,095.54	.....	984.85	59,673.38	13,670.81	23,783.69	3,572.14	669.48	8,000.00	4,029.63	122,774.78
1930	350,170.92	81,343.46	50,000.00	20,834.91	2,500.89	.....	375.00	65,600.39	16,966.30	17,492.92	1,355.56	639.04	10,000.00	2,726.37	134,278.88
1931	349,344.95	76,408.08	.....	14,890.58	5,131.68	.....	.....	65,601.03	19,541.40	24,439.56	3,650.58	1,707.40	10,000.00	6,713.26	128,871.12
1932	337,490.01	76,071.24	.....	16,710.25	1,852.40	.....	.....	61,127.48	19,155.01	20,039.28	1,934.84	335.00	10,000.00	3,607.97	97,303.32
1933	268,633.38	67,814.24	5,422.63	13,961.02	.....	.....	.....	62,996.66	18,120.73	7,644.14	2,199.91	118.65	10,000.00	3,384.28	86,757.06
1934	257,423.08	65,806.61	.....	11,025.88	.....	1,037.19	.....	66,502.59	18,229.23	9,267.86	1,641.06	162.86	10,000.00	606.53	81,711.26
1935	265,630.94	68,203.46	.....	11,596.51	.....	.....	.....	60,237.94	18,832.57	16,530.28	2,031.56	275.21	10,000.00	383.07	82,929.14
1936	265,057.37	68,760.95	.....	13,496.42	100.00	.....	.....	57,270.94	17,886.45	20,918.46	2,867.50	178.43	10,000.00	470.13	79,835.73
1937	267,192.29	73,807.74	.....	11,527.85	.....	.....	.....	56,262.45	16,408.55	22,417.08	2,799.17	24.79	19,047.09	1,415.39	92,609.40
1938	282,759.71	79,225.20	.....	10,235.70	.....	.....	.....	57,043.10	13,408.11	15,351.51	558.82	.....	20,455.95	431.41	93,543.59
1939	283,280.81	79,164.23	.....	11,019.23	.....	.....	.....	51,050.57	12,941.70	23,012.27	403.75	175.00	20,475.95	345.30	92,576.90
1940	282,761.15	78,905.12	.....	8,392.10	.....	102,343.87	.....	57,513.25	12,022.76	39,627.52	577.10	.....	20,069.17	533.85	98,501.05
1941	286,284.59	62,052.95	.....	15,947.33	.....	187,408.02	.....	84,254.19	9,466.70	57,236.77	574.40	.....	18,206.34	1,316.89	100,846.55
1942	258,656.76	50,931.00	.....	10,169.20	.....	43,088.43	.....	49,226.40	4,807.79	8,369.36	553.52	.....	10,762.57	401.65	144,765.21
1943	305,203.23	33,324.31	.....	11,904.80	.....	38,860.03	3,500.00	51,833.51	5,154.21	2,319.36	336.19	.....	9,832.98	574.01	73,132.91
1944	315,787.82	33,790.82	.....	17,316.09	.....	32,101.60	23,420.00	50,691.82	3,717.28	5,106.59	96.48	.....	10,234.06	405.52	88,594.55
1945	334,288.37	38,158.81	.....	20,745.35	.....	58,943.48	225.52	58,846.39	5,928.38	11,468.19	1,466.19	.....	12,681.89	1,001.92	112,541.29
1946	366,113.74	42,654.03	.....	24,688.34	.....	122,388.48	*34,997.55	62,439.25	6,742.70	43,037.09	172.30	.....	14,238.14	741.14	168,881.41
1947	440,147.60	40,285.04	.....	22,665.64	.....	101,392.80	*19,669.26	85,294.53	8,715.67	71,342.79	687.91	.....	15,751.26	690.03	348,442.82
1948	469,638.83	38,564.40	.....	30,690.08	116.71	93,683.84	.....	83,652.16	9,419.90	26,461.29	470.83	.....	16,708.48	1,004.40	346,222.76
1949	497,900.12	40,189.02	.....	25,400.02	.....	344,122.56	*4,203.50	82,044.22	11,170.76	50,408.80	1,370.90	.....	31,251.50	1,220.17	333,513.75
1950	506,035.90	40,158.48	.....	23,731.77	.....	62,598.22	.....	85,411.22	11,404.61	22,947.59	767.71	.....	35,049.90	970.52	298,458.78
1951	553,918.55	42,774.35	.....	28,913.22	.....	69,747.69	.....	94,063.94	12,966.97	17,934.34	613.19	.....	17,936.21	1,365.34	271,570.10
1952	579,931.76	45,809.54	.....	27,588.02	.....	40,542.32									

NEW YORK ZOOLOGICAL SOCIETY

INCORPORATION of the New York Zoological Society by the State of New York was accomplished under Chapter 435 of the Laws of 1895 and the basic purposes of the Society were embodied in Section 2:

Said corporation shall have power to establish, maintain and control zoological parks, gardens, or other collections for the promotion of zoology and kindred subjects, and for the instruction and recreation of the people. Said corporation may collect, hold and expend funds for zoological research and publication, for the protection of wild animal life, and for kindred purposes, and may promote, form, and co-operate with other associations with similar purposes, and may purchase, sell, or exchange animals, plants, and specimens appropriate to the objects for which it was created.

Subsequently, at a special meeting of the Commissioners of the Sinking Fund, City of New York, held on March 24, 1897, a resolution was passed allotting South Bronx Park for the use of the New York Zoological Society and establishing the terms of a management agreement under which the Society has operated since that date, with only minor modifications.

The resolution of March 24, 1897, and the supplemental agreement of January 24, 1942, provided that the Society should furnish the original equipment of buildings and animals, that it should raise \$250,000 by subscription within three years of the date of starting work on the improvement of the grounds, that the Society should have the right to establish an endowment fund to be used solely for the general uses and purposes of the Society unless otherwise specified by the donors, that the City of New York should provide funds for the maintenance and care of the Zoological Park and for the maintenance of the animal collections, that the Zoological Park should be open to the public free at least four days a week, that the Society may expend the net proceeds of facilities only for the purchase of animals and the improvement of the Zoological Park and that the Society should have the right to make and control all appointments of employees and to fix salaries and make promotions.

NEW YORK ZOOLOGICAL SOCIETY

Organized 1895

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II. LEVI P. MORTON	1897 to 1909
III. HENRY FAIRFIELD OSBORN	1909 to 1925
IV. MADISON GRANT	1925 to 1937
V. W. REDMOND CROSS	1937 to 1940
VI. FAIRFIELD OSBORN	1940

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VI. W. REDMOND CROSS	1932 to 1937
VII. KERMIT ROOSEVELT	1937 to 1939
VIII. ALFRED ELY	1939

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III. MADISON GRANT	1915 to 1916
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V. HENRY D. WHITON	1925 to 1930
VI. KERMIT ROOSEVELT	1930 to 1937
VII. ALFRED ELY	1937 to 1939
VIII. LAURANCE S. ROCKEFELLER	1939

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III. PERCY RIVINGTON PYNE	1903 to 1922
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V. DAVID H. MCALPIN	1953

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- I. MADISON GRANT1895 to 1925
- II. WILLIAM WHITE NILES1925 to 1935
- III. FAIRFIELD OSBORN1935 to 1940
- IV. HAROLD J. O'CONNELL1941

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- I. CHARLES E. WHITEHEAD1895 to 1896
- II. HENRY FAIRFIELD OSBORN1896 to 1903
- III. CHARLES T. BARNEY1903 to 1907
- IV. HENRY FAIRFIELD OSBORN1907 to 1909
- V. MADISON GRANT1909 to 1937
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- VII. LAURANCE S. ROCKEFELLER1940 to 1943
- VIII. FAIRFIELD OSBORN1943 to 1945
- IX. LAURANCE S. ROCKEFELLER1945

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 Zoological Park1896 to 1926
- II. CHARLES H. TOWNSEND
 New York Aquarium1902 to 1937
- III. W. REID BLAIR
 Zoological Park1926 to 1940
- IV. ALLYN R. JENNINGS
 Zoological Park1940 to 1941
- V. CHARLES M. BREDER, JR.
 New York Aquarium1937 to 1943
- VI. JOHN TEE-VAN
 Zoological Park1952

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Under the Sponsorship of The New York Zoological Society
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MEMBERSHIP IN THE NEW YORK ZOOLOGICAL SOCIETY

THE NEW YORK ZOOLOGICAL SOCIETY was founded in 1895 for the "instruction and recreation of the people" through the establishment of a Zoological Park, for the promotion of zoology through exhibition of collections, publication, research and exploration, and for the conservation of animal life of the world. Since 1899 the Zoological Society has directed the New York Zoological Park and in 1902 it was entrusted with the management of the New York Aquarium.

MEMBERSHIP is actively invited of all persons who are interested in the objects of the Society and desire to contribute toward its support.

ANNUAL MEMBERSHIP is \$15. Contributing Membership is \$25. These Memberships entitle the holders to Member's cards and 10 guest tickets of admission to the Zoological Park on pay days; a copy of the *Annual Report*; a subscription to *Animal Kingdom*, the bi-monthly publication of the Society; privileges of the Library and Members' Lounge in the Administration Building and to attend all open meetings of the Society. Tickets to all sections of the Zoological Park for which an admission charge is made are available, free, to Members upon application at the Administration Building in person. Members will be taken on "behind the scenes" tours of the Zoological Park and Aquarium, without charge, on application, and are entitled to 20% discount on all publications of the Society. We are advised that Contributing Membership fees are deductible from income tax within the legal limits.

LIFE MEMBERSHIP is \$300. See By-laws for conversion of Annual and Contributing to Life Membership. Other classes of membership are: Patron, \$1,000; Associate Founder, \$2,500; Founder, \$5,000; Founder in Perpetuity, \$10,000; Benefactor, \$25,000.

APPLICATIONS for membership may be submitted to any officer of the Society or to the Society's general office at 30 East 40th Street, New York 16, N. Y.

FORM OF BEQUEST

I do hereby give and bequeath to the "New York Zoological Society," of the City of New York.....

.....

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 Henderson, Dr. Edward
 Henshel, Mrs. Harry B.
 Hessberg, Edward K.
 Hesse, Mrs. H. G.
 Hesse, Miss Janet
 Hewitt, Mrs. Thomas D.
 Heyd, Dr. Charles Gordon
 Heyman, Mrs. David M.
 Higginson, Mrs. Thomas L.
 Hillas, Miss Marjorie
 Hillman, Harry R.
 Hills, Mrs. James M.
 Hinrichs, Hans
 Hird, Henry E.
 Hird, Miss Martha
 Hird, Miss Mary E.
 Hirshberg, Eliot P.
 Hoffman, F. Burrall
 Hoffman, John E.
 Hoffman, William W.
 Holbrook, Robert D.
 Holmes, Mrs. Margot A.
 Holsapple, Earle T.
 Homewood, Mrs. Brooke
 Hooper, John W.
 Houghton, Arthur A., Jr.
 Howard, Miss Lois E.
 Howell, W. Huntting
 Hubbard, Allen S.
 Hubbard Richard L.
 Huffard, Paul P.
 Hun, Samuel Hand
 Hunt, Mrs. Richard C.

*Deceased

- Huntington, Mrs. Archer M.
Huntington, Miss
Elizabeth Q.
Huntington, Mrs. George H.
Hutchins, Mrs. Waldo, Jr.
Hyman, Mrs. Abraham
Igleheart, Austin S.
Irwin, William F.
Iselin, O'Donnell
Iselin, William O'D.
Isenberg, A. H.
Israel, Leon, Jr.
Isreeli, Jack
Jackson, Frederick W.
Jackson, Mrs. Percy
Jacobi, Lester E.
Jacobs, Edwin L.
Jaeger, Fred P.
Jaffe, Herman
James, Mrs. Bayard
James, Edward
Jennings, Mrs. B. B.
Jensen, Miss Margaret I.
Johnson, Mrs. Wayne
Jones, C. Maury
Jones, Clayton B.
Jones, Kenneth A.
Jones, Roy E.
Josephs, Mrs. Devereux C.
Judson, Miss Helen
Kean, Robert W., Jr.
*Keil, Henry F.
*Keller, Carl T.
Kenedy, Louis
Kennedy, Mrs. Arthur
Kerr, Lewis S., Jr.
Kim, William
King, Frederick P.
Kingsley, Darwin P., Jr.
Kirkland, Mrs. William R., Jr.
Kissel, Mrs. W. Thorn
Kleitz, William L.
Knight, Dr. George H. H.
Knobloch, Henry F. J.
Kopelson, Mrs. Kenneth
Kosmak, Mrs. George W.
Krumb, Henry
Lamont, Mrs. Corliss
Landeck, Walter V.
Lane, Mrs. William H.
Lanman, Dr. Jonathan T.
Lapidos, Isaac
Laughlin, Thomas I.
Lawrence, Mrs. James F.
Leach, Henry Goddard
Lee, James T.
Leffingwell, Russell C.
Lehman, Mrs. Herbert H.
Leonhardt, F. H.
Lerch, F. H., Jr.
Levey, Charles Bispham
Levey, Miss Margaret
Bispham
Levi, Julian Clarence
Levin, N. W.
Levitt, Mrs. Edward T.
Lewine, Jerome
Lewis, George W.
Lieberman, Mrs. James B.
*Lichtenstein, Oscar R.
*Lilienthal, Mrs. Joseph L.
Linder, Harold F.
Lippencott, Miss Janet S.
Litchfield, Edward S.
Livingston, Miss Anna P.
Llavallo, Jaime
Lockwood, Luke B.
Lockwood, William A.
Loeb, Henry A.
Loeb, John L.
Loening, Mrs. Albert P.
Logan, Miss Florence L.
Long, John E.
Lyeth, J. M. Richardson
Maass, Mrs. Richard
Madigan, Mrs. Thomas F.
Magie, James McCosh
Magrane, John S.
Mallory, Mrs. Clifford D.
Manger, Mrs. Julius
Manheim, Frank J.
Manice, Mrs. William
DeForest
Mann, Alan N.
Marks, Carl
Marron, Louis E.
Marshall, Walter P.
Marston, Edgar J.
Martin, H. Bradley
Martin, Mrs. Shelton E.
Martini, Mrs. Fred
*Mason, Charles N.
Mathers, William H.
Matthiessen, Erard A.
Mayer, John
Mayer, Mrs. John
Mayer, Mrs. John A.
Maynard, Richard S.
Mazur, Mrs. Paul
McAlpin, David H., Jr.
McCann, F. W.
McCann, Jonathan W.
McClintock, Gilbert S.
McClung, Richard G.
McCombs, Dr. A. P.
McCormack, Mrs. Alfred
McCormick, John L.
McCormick, Miss Mildred
McCulloh, J. S.
McElroy, Mrs. Thora Ronalds
McGee, Clifford W.
McKee, Robert E.
McKelvy, Mrs. Robert
McLane, Huntington
McLane, Mrs. Huntington
McQuillen, Paul W.
Meade, George P.
Meagher, Edward C.
Melville, Ward
Mendelsohn, Walter
Merrill, F. Hamilton, Jr.
Merritt, Mrs. Walter Gordon
*Meyer, Arthur S.
Meyer, Maurice, Jr.
Migel, Richard H.
*Milburn, Mrs. Devereux
Miles, Mrs. E. W.
Milliken, Mrs. Roger
Mills, Dudley H.
Milmine, Mrs. George P.
Miloscia, William
Model, Mrs. Jean
Montgomery, Mrs. Robert
Moore, George G., Jr.
Moore, Mrs. Louis De B.
Moose, Edward
Moran, Eugene F., Jr.
Morehead, John M.
Morgan, Henry S.
Mosenenthal, Mrs. Herman O.
Moses, Mrs. Henry L.
Moses, L. Gustam
Moucha, E.
Moyer, Miss Eleanor
Munroe, Miss Antonia
Myers, Mrs. Cornell
Mylod, Charles J.
Myrin, Mrs. Alarik
Nehrbas, Harold A.
Nestel, Walter
Newburger, Com. Morton J.
Newton, Edward K.

*Deceased

Newton, Maurice
 Nichols, Mrs. Charles W., Jr.
 Nichols, Mrs. George
 Nichols, Mrs. Morton C.
 Nicholson, Mrs. G. J. Guthrie
 Nields, John W.
 Nisselbaum, Charles B.
 Noerr, Robert
 Nourse, Mrs. Charles J.
 Nyselius, Gustav
 Oeste, Miss Marion
 Ogden, Dr. Herbert S.
 Oliver, Mrs. Andrew
 Olmsted, Mrs. Henry C.
 Ordway, Miss Ellen
 Ordway, Miss Katharine
 Osborn, Earl D.
 Osborn, Mrs. Frederick
 Osborn, Mrs. John J.
 Osborne, Mrs. Dean C.
 Osborne, John A.
 Ostroga, Seymour
 Otto, Elmer C.
 Outerbridge, Frank R.
 Page, Robert G.
 Paine, Hugh E.
 Painter, Carl W.
 Paley, William S.
 Paley, Mrs. William S.
 Palmer, Carleton H.
 Parish, R. L.
 *Parsons, Mrs. Edgerton
 Parsons, Miss Katharine deB.
 Peabody, Miss Amelia
 Peabody, James Bishop
 Pease, Perry R.
 Peck, A. Wells
 Peck, Mrs. Samuel A.
 Perkins, George W.
 Perkins, Mrs. George W.
 Perrin, Lester W.
 Pforzheimer, Carl H.
 Phipps, John S.
 Pierrepont, John
 Pierrepont, Mrs. R.
 Stuyvesant
 Pierson, Henry L.
 Pinney, Edward S.
 Pitt, Mrs. Malcolm
 Pool, Dr. Lawrence
 Poor, Mrs. Walter S.
 Porter, Hugh
 Potter, Warwick
 Potts, Charles E.
 Pratt, H. Irving
 Pratt, John T., Jr.
 Pratt, Richardson
 Pratt, Sherman
 Preston, William P. T.
 Preston, Mrs. William P. T.
 Pruyn, Dr. F. Morgan
 Pryor, Mrs. Morris McKim
 Ramsey, Lloyd
 Randolph, Mrs. S. B.
 Rasmus, William T.
 Ratcliffe, George L.
 Raynolds, Mrs. David R.
 Reed, Mrs. Chester T.
 Reisser, Dr. Otto H.
 Renton, Stanley H.
 Revedin, Marchesa M.
 Revits, Samuel
 Rice, Mrs. A. Hamilton
 Richard, Harold C.
 Richard, Mrs. Harold C.
 Richards, Archibald M.
 Richards, Mrs. Lloyd
 Richardson, David L.
 Riegel, Mrs. Benjamin
 DeWitt
 Riley, Dr. Conrad M.
 Riley, Mrs. Conrad M.
 Riley Mrs. James W.
 Ripley, James H.
 Ripley, Julien A.
 Ritchie, Alfred A.
 Roberts, George
 Rockefeller, William A.
 Rockwell, Mrs. Fletcher W.
 Rodgers, William S. S.
 Roosevelt, Mrs. George E.
 Rose, Alfred L.
 Rosenfeld, Ernest
 Roth, Mrs. William P.
 Rowland, Benjamin, Jr.
 Royster, Mrs. Thomas S., Jr.
 Ruml, Mrs. B.
 Rumsey, Charles C.
 Rusk, Dean
 Rutherford, Mrs. John
 St. John, T. Raymond
 Sargent, Miss Kathrine A.
 Satin, Mrs. Martha
 Saunders, Bertram H.
 Saunty, Joseph V.
 Scaife, Alan M.
 Schecter, Dr. Samuel
 Schenker, Dr. A.
 Scherman, Mrs. Harry
 Scheuermann, Henry
 Schmidt, Alexander
 Schneller, George O.
 Schoenburg, Mrs. Peter
 Scholle, William D.
 Scholtz, Mrs. Janos
 Schulte, Mrs. David A.
 Schur, Ira A.
 Schwarz, Miss Emily E.
 Schwarz, Herbert F.
 Scott, Mrs. Stuart
 Scribner, Charles T.
 Scudder, Miss Antoinette Q.
 Sears, Mrs. Henry
 Seaton, Max Y.
 Sedgwick, Mrs. Francis M.
 Seronde, Dr. Joseph, Jr.
 *Sheldon, James
 Sheldon, Mrs. Magda Merck
 Sheldon, Peter
 Sheridan, Philip
 Shookhoff, Howard D.
 Simmons, Sanford G.
 Sinclair, Mrs. Jennie H.
 Slaughter, Mrs. Charles
 Smillie, Ralph
 Smith, Francis M.
 Smith, Miss Gertrude
 Robinson
 Smith, Mrs. Hayden
 Smith, Thomas L.
 Smith, Winthrop H., Jr.
 Smithers, C. Francis
 Smull, Mrs. J. Barstow
 Sonfield, Charles
 Spalding, Mrs. Albert
 Spalding, M. Boardman
 Sparrow, John Sherwood
 Spier, Mrs. June Havoc
 Spooner, Ray Newhall
 Sprague, Raymond
 Stebbins, Harold
 Staub, Harry
 Stawitz, Frederick J.
 Stebbins, Mrs. Horace C.
 Stebbins, Theodore E.
 Steiger, Harold
 Stein, Dr. Kenneth E.
 Stein, Meyer
 Steinhardt, Mrs. Frederick J.
 Stellar, Dr. Stanley
 Stetson, J. P.
 Stevens, William D.

*Deceased

- *Stillman, Miss Charlotte R.
 Stillman, Mrs. Jay
 Stoddard, William
 Stokes, J. G. Phelps
 Stokes, Mrs. J. G.
 Storck, Henry F.
 Stotz, Norman I.
 Stout, Mrs. Andrew V.
 Straus, Donald B.
 Straus, Roger W., Jr.
 Sturges, Mrs. Walter Knight, Jr.
 Stuyvesant, Peter
 Sulzberger, Arthur Hays
 Sulzberger, Mrs. Arthur Hays
 Surkamp, Arthur
 Swan, Mrs. Thomas W.
 Swenson, S. R.
 Swift, Mrs. Edward F., Jr.
 Swift, Harold H.
 Switz, Mrs. Paul F.
 Swope, Gerard
 Swope, John
 Tate, Mrs. H. Clinch
 Taylor, Mrs. Henry C.
 Taylor, Mrs. Read
 Ten Eick, William A.
 Terry, John T.
 Thacher, Mrs. John S.
 Thatcher, Mrs. James L.
 Thomas, Harvey M.
 Thomas, Joseph A.
 Thompson, Earle S.
 Thompson, Mrs. Lewis S.
 Thorne, Oakleigh L.
 Timolat, James G., Jr.
 Timolat, Louis K.
 Todd, Mrs. Russell W.
 Tomlinson, R. E.
 Townsend, Edward P.
 Tozzer, Mrs. Alfred M.
 Tozzer, Mrs. Isabel Kellers
 Tree, Ronald
 Tuchman, Miss Lucy
 Tucker, Carll, Jr.
 Tucker, Mrs. Carll
 Tucker, Mrs. John
 Tucker, Mrs. Nion
 Tully, Miss Alice
 Turner, Mrs. Huntington M.
 *Turner, Dr. Kenneth B.
 Turner, Lewis
 Van Allen, Miss Betsy
 Vanderbilt, William H.
 Vanderpoel, Mrs. Floyd L.
 Van Dyke, Mrs. Tertius
 Van Norden, Miss Margery L.
 Van Valey, Dr. Edwin C.
 Van Vleck, Howard A.
 Varona, Luis S., Jr.
 Von Au, Mrs. Otto E.
 von Hennig, Horst
 von Meiss-Teuffen, Mrs. Hans
 von Stade, Mrs. F. Skiddy
 Vretta, Carl
 Vuilleumier, Dr. J. A.
 Waddell, Mrs. Chauncey L.
 Waldes, Milo
 Walker, Miss Miriam Dwight
 Walton, Rudolph L.
 Wanek, Mrs. Anna N.
 Warburg, Mrs. Felix M.
 Warburg, Frederick M.
 Warburg, Paul Felix
 Ward, Miss Winifred S.
 Wardwell, Miss Alice W.
 Wardwell, Mrs. Edward R.
 Warfield, Ethelbert
 Waterman, Robert E.
 Watkins, John B.
 Watson, Mrs. Jeannette
 Weaver, Mrs. William B., Jr.
 Webb, Mrs. Vanderbilt
 Weber, Mrs. John J.
 Webster, Dr. Jerome P.
 Weil, Frank
 Welch, William L., Jr.
 Weld, Mrs. Philip B.
 Wellington, C. Oliver
 Wells, Dr. Gibson J.
 West, Mrs. Davenport
 Whipple, Mrs. Taggart
 Whitaker, George W.
 White, Harold T., Jr.
 Whitman, Bret Harte, Jr.
 Whitney, Mrs. Howard F., Sr.
 Whitridge, Arnold
 Whitridge, Mrs. Arnold
 Willetts, William P.
 Willetts, Mrs. William P.
 Williams, Mrs. Alexander
 Williams, Dr. Byard
 Williamson, Clifton P.
 Wilmerding, Mrs. Lucius
 Wilson, Mrs. Paul E.
 Winter, Dwight
 Wolff, Henry J.
 Wood, Ernest N.
 Woodward, Cedric R.
 Woodward, Mrs. Julian L.
 *Woolley, Mrs. Knight
 Worcester, Dean K.
 Wrenn, Philip W., Jr.
 Wright, Mrs. Claire R.
 Wright, John S.
 Wurzbach, Dr. Frederick A., Jr.
 Yohai, Morrie R.
 Young, Howard
 Zabriskie, Christian A.
 Zeehandelaar, F. J.
 Zelenko, Harry
 Zepp, Dr. Clarence P., Jr.

Annual Members

- Abbott, Mrs. Theodore J.
 Abella, Luis, Jr.
 Abeloff, Dr. Abram J.
 Abrahams, Michael M.
 Achelis, John Fritz
 Adams, Frederick B.
 Adams, John C.
 Adams, Mrs. Pierpont
 *Deceased
 Adams, Dr. Warren S.
 Adee, Mrs. Ernest R.
 Adler, Siegmund
 Aeschlimann, Mrs. John
 Agathon, Oshin
 Agnew, A. Gifford
 Agnew, Cornelius R., Jr.
 Aiken, Mrs. F. E.
 Akston, Mrs. Joseph James
 Albert, Stephen J.
 Aldrich, Miss Amey Owen
 Alexander, A. B.
 Alexandre, Miss Anna R.
 Allen, Alfred Reginald
 Allen, Charles W.
 Allen, Mrs. Frederick L.

Allen, Mrs. Jean P.
 Allyn, Stanley C.
 Alsleben, Alfred A.
 Ames, Ward
 *Amos, Charles L.
 Anderson, Douglas W.
 Anderson, Lewis N.
 Anderson, Mrs. William
 Andrews, Dr. George C.
 Andriesse, Albert
 Ansbacher, D. A.
 Appleton, Francis R., Jr.
 Archbold, Mrs. Lucie
 Armour, William
 Armstrong, Dr. Edward McP.
 Armstrong, James F.
 Arnheim, Alvin J.
 Arnold, Miss Frances
 Aronson, Bernard
 Asch, David
 Askin, Seymour R.
 Auchincloss, C. C.
 Auchincloss, Mrs. Edgar S.
 Aufricht, Dr. Gustave
 Auerbeck, M. J., Jr.
 Averett, Mrs. Elliott
 Avery, Miss Myrtille
 Ayer, Charles F.
 Ayers, Miss Isabelle M.
 Babcock, Hugh H.
 Bacon, Mrs. Antoinette
 Bacon, Mrs. Robert Low
 Bacon, Rogers H.
 Baer, William B.
 Bahnsen, Mrs. Henry
 Baker, Dr. Alice T.
 Baker, Mrs. Harold d'O.
 Bakhmeteff, Mrs. Boris A.
 Baldwin, Mrs. William H.
 Ball, Robert E.
 Ballantine, Arthur A.
 Ballantyne, A. M.
 Ballentine, Mrs. Albert W.
 Balsam, Michael
 Bangs, Francis N.
 Barach, Dr. Alvan L.
 Barclay, Mrs. Reginald
 Bareiss, Walter
 Barker, Miss Elizabeth
 Barlow, Chris and Buffy
 Barlow, Mrs. S. L. M.
 Barnard, J. Augustus
 Barnes, Mrs. A. Victor

Barrett, Arthur L.
 Barnsley, Miss Emma E.
 Baronio, Franco A.
 Barreto, Mrs. Blanche
 *Barrett, William Felton
 *Barrow, Archibald
 Bartlett, Edwin D.
 Basner, Austin E.
 Bass, Dr. Murray H.
 Bassett, Carroll K.
 Bastedo, Mrs. Philip
 Battey, William Earle
 Baxter, Mrs. Stanley M.
 Bayne, Howard
 Beach, C. A.
 *Beach, William N.
 Beadel, Henry L.
 Beadleston, Miss Edith
 Beal, Mrs. Gerald F.
 Beals, John D., Jr.
 *Beard, Louie Arnold
 Beard, M. Gould
 Beard, Stanley D.
 Betchtel, Mrs. Edwin DeT.
 Becker, Edward L.
 *Begg, William S.
 Beinecke, Walter
 Bell, Frank K.
 Bellamy, Mrs. F. Wilder
 Bender, Mrs. Morris B.
 Benedict, Elliot S.
 Benjamin, Mrs. William M.
 Benkard, Franklin
 Bennett, Lawrence
 Bennett, Robert W.
 *Benziger, Bruno
 Berch, Barnett
 Berg, Mrs. Hunter
 Bergamini, Dr. Herbert V. W.
 Bergh, Philip
 Berlin, Mrs. F. Henry, Jr.
 Bernard, Dr. Richard
 Bernheim, Mrs. Henry J.
 Bernheimer, Sidney G.
 Bernstein, Jerome W.
 Bertheau, Cesar J.
 Best, Mrs. Charles B.
 Biberman, David
 Bicher, Robert B.
 Bierman, D. H.
 Binder, Edwin A.
 Birch, Mrs. John F.
 *Birchall, Mrs. Frederick T.
 Birchall, Miss Katharine H.

Bird, S. Hinman
 Bird, Mrs. S. Hinman
 Birdseye, Miss Mary Platt
 Birnbaum, Martin
 Bischel, Henry V.
 Bischoff, Miss E. May
 Black, Bertram J.
 Black, Miss Ellen E.
 Blackham, Wilfrid
 Blain, Dr. Alexander W.
 Blanco, Juan Carlos, Jr.
 Blauner, Robert
 Bleyman, Michael
 Bliss, Miss Susan D.
 Bliss, Mrs. Walter P.
 Blodgett, Mrs. Thomas H.
 Blond, Abraham
 Bloomingdale, Samuel J.
 Blossom, Mrs. Dudley S.
 Blount, Robert E.
 Blumenthal, Mrs. Sidney
 Boardman, Mrs. Bradford
 Boardman, Kenneth
 Boardman, Mrs. Kenneth
 Boardman, Miss Rosina C.
 Bocher, Main
 Boegehold, Mrs. E. S.
 Boissevain, Mrs. Adolphe
 Bond, Mrs. Stephen N.
 Booher, Edward E.
 Booth, Willis H.
 Borden, Mrs. John C.
 Borden, Richard
 Borg, Mrs. Sidney C.
 Bori, Miss Lucrezia
 Borish, Mrs. M. E.
 Bostwick, Dunbar W.
 Bott, Mrs. George
 Botzow, Mrs. William G. F.
 Bouman, Mrs. Leonard F.
 Bourne, Mrs. Robert C.
 Bowdoin, George Temple
 Boyce, Arthur C.
 Boyer, Mrs. Philip
 Boylan, Mrs. Anne
 Braaten, Arthur P.
 Bradford, Mrs. Amory H.
 Brady, Mrs. Bertha C.
 Braga, B. Rionda
 Braga, George A.
 Brand, Mrs. Albert R.
 Brassard, Dr. J. A.
 Bratter, Edward M.
 Brecher, Leo

*Deceased

Breslin, Mrs. L. R., Jr.
 Brewster, Miss Janet L.
 Brewster, Miss Virginia W.
 Brice, Mrs. Helen E.
 Brick, George H.
 Bridgewater, Mrs. William
 Briggs, Mrs. Bertha N.
 Briggs, Miss Janet Zaph
 Bringsjord, Lester
 Brody, Barnie
 Brody, David A.
 Bromfield, Louis
 Brooks, Ernest, Jr.
 Brooks, George A.
 Brown, Charles S.
 Brown, Col. Edward F.
 °Brown, Floyd deL.
 Brown, Dr. George
 Brown, Grover C.
 Brown, James M.
 Brown, Robert A.
 Brown, Vernon H.
 Browne, Miss Frances
 Browne, Gilbert G.
 Bruckmann, John C.
 Bruell, Frederick
 Brundin, Y. Pierre
 Bryant, Miss Penny
 Bryer, Jackson R.
 Buchheister, Carl W.
 Buck, Ellsworth B.
 Buckbee, George E.
 Buckley, Jere D.
 Bugbee, Mrs. Henry G.
 Bulkley, David T.
 Bulkley, Mrs. David Tod
 Bull, Mrs. Ludlow
 Bullock, Mrs. Hugh
 Bullowa, Mrs. David M.
 Buonocore, Catello H.
 Burchell, Henry
 Burckardt, Miss Magdalena
 Burden, James A.
 Burden, Mrs. W. A. M.
 Burdett, Dr. Fletcher H.
 Burgess, Thornton W.
 Burlingame, Mrs. Frederic A.
 Burlingham, Charles
 Burlingham, Mrs. Charles
 Burlingham, Charles C.
 Burnett, Mrs. R. Peyton
 Burns, Kenneth
 Burpee, George W.
 Burr, Andrew, Jr.

Burton, John H., 2nd
 Bush, Donald F.
 Bushnell, Mrs. Ericsson F.
 Butler, Mrs. Arthur W.
 Butt, John D.
 Butterfield, Miss Alice D.
 Butterworth, Mrs. F. S.
 Byrne, Mrs. Robert M.
 Cabot, Mrs. Francis H., Jr.
 Cabot, Mrs. Henry B.
 Caesar, Harry I.
 Caffyn, Harold R.
 Cain, Byron B., Jr.
 Caire, Mrs. Laure C.
 Caldwell, Mrs. Charles W.
 Callahan, Mrs. Carmen V.
 Cameron, Kirk L.
 Cammann, Mrs. H. Schuyler
 Camp, Frederic E.
 Campbell, Mrs. Marta P.
 Cane, Melville H.
 Canfield, Cass
 Canfield, Mrs. Cass
 Cannon, Mrs. Joseph M.
 Caplin, Stuart
 Carey, Mrs. Andrew
 Galbraith
 Carey, John P.
 Carle, Mrs. R. W.
 Carley, James
 Carlisle, Mrs. John
 Carpenter, William M.
 Carroll, G. Wyman
 Carroll, Philip A.
 Carson, Mrs. J. Henry
 Cartwright, Mrs. Beatrice B.
 Cary, Mrs. C. Reed
 Casamajor, Dr. Louis
 Casamajor, Miss Martha
 Cecil, Dr. Russell L.
 Cenzipa, Louis
 Chambers, Mrs. Robert A.
 Chandler, William R.
 Chanler, William Astor
 °Chapman, Dr. T. L.
 °Charles, Mrs. M. de Peyster
 Chase, Mrs. G. T.
 Chase, Kenneth S.
 Chauncey, Miss Emily
 Chester, Mrs. Hawley T.
 Chiang, Yee
 Childs, Edward C.
 Chiusano, Charles
 Choate, Arthur O.

Choate, Miss Mabel
 Choate, Mrs. Whitney Bourne
 Christensen, Dr. L. R.
 Church, Austin
 Church, Mrs. Charles T.
 Church, Mrs. Willard
 Cizek, Dr. Louis J.
 Clark, Mrs. Blair
 Clark, David C.
 Clark, Mrs. Francis T.
 Clark, Mrs. Harold Benjamin
 Clark, Harold T.
 Clark, H. Huber
 Clark, Mrs. LeRoy
 Clark, W. T.
 Clarkson, Mrs. Christopher
 Clayburgh, Mrs. A. H.
 Clayburgh, Mme. Alma
 Cleghorn, Albert E.
 Clifford, George H.
 Cloete, Stuart
 °Clowes, Frederick V.
 Clowes, Miss M. H.
 Clyde, William P.
 Cobb, Boughton
 Cochu, Ferdinand
 Coffey, Miss Katherine
 Cohen, Arthur J.
 Cohen, Edward I.
 Cohen, Morris
 Colbron, Miss Barbara
 Cole, Charles H.
 Cole, Dr. C. Monford
 Coleman, Joseph A.
 Coleman, Leighton
 Colgate, Henry A.
 Colgate, Mrs. John K.
 Collier, Mrs. R. J.
 Collins, Miss Elizabeth E.
 Colt, Harris D.
 Combier, Mrs. Julia E.
 Conde, Miss Corinne
 Congdon, Lee
 Connally, M. G.
 Connell, Mrs. Dorothy E.
 Connick, Arthur E.
 Coogan, Mrs. Jay
 Cook, Mrs. Hobart
 Cooke, Carleton S.
 Cooke, Thomas F.
 Coolidge, Henry Parsons
 Coolidge, John T.
 Cooney, Mrs. Edwin W.
 Cooper, Fred

Cooper, J. W.
 Cooper, W. M.
 Corbin, Mrs. John
 Corbin, R. Beverly
 Cormier, Francis
 Corning, Miss Ursula
 Corwin, Saul C.
 Costigan, Philip J.
 Coudert, Ferdinand W.
 Cowdin, J. Cheever
 Cowles, William Sheffield
 Cox, Joseph John
 Cragin, Donald Wilson
 Crawford, Mrs. Charles A.
 Crawford, Mrs. J. S.
 Crawley, Mrs. John C.
 Creighton, Gerald J.
 Cresson, Mrs. William Penn
 Crimmins, Miss Mary
 Crimmins, Thomas
 Crocker, George A.
 Crohn, Mrs. Burrill B.
 Cromwell, Mrs. Lincoln
 Cronquist, N. R.
 Cross, Mrs. John W.
 Crouse, Master Timothy
 Crowley, Brig. Gen.
 Jerome B.
 Crowley, Dr. Ralph M.
 Crowninshield, Mrs.
 Francis B.
 Cuddihy, Arthur B.
 Cullman, Mrs. Edgar M.
 Cullman, Howard S.
 Cullman, Mrs. Joseph F., Jr.
 Curtis, Mrs. Edward P.
 Curtis, Miss H. S.
 Cushman, Paul
 Dailey, Mrs. Clarke G.
 Dallett, Mrs. Frederic A.
 Daly, D. Loughran
 Dammann, Milton
 Dana, Miss Mary H.
 Dane, Ernest B., Jr.
 Daniels, Miss Julia
 Danzig, Dr. Samuel D.
 Darlington, Mrs. Herbert S.
 Darrell, Norris
 Dater, Mrs. Alfred W.
 Davenport, Mrs. Frederick
 M., Jr.
 Davenport, Henry J.
 Davey, Miss Carolyn
 Davidson, Miss Margaret

Davies, Frederick M.
 *Davis, Mrs. Cecil Clark
 Davis, Mrs. Jane Quinn
 Davis, Morgan
 Davison, Mrs. Henry
 Pomeroy
 Day, Miss Florence E.
 Day, Watson Beach
 Debevoise, Thomas M.
 deBrun, Miss Elsie S.
 De Cesare, John
 de Coppet, Miss Gertrude
 de Diego, Mrs. Julio
 Deering, Mrs. William R.
 Degener, John F., Jr.
 Deger, Peter
 deGersdorff, Mrs. C. C.
 de Kay, Mrs. Sidney
 Delacorte, Albert P.
 Delacorte, George T.
 Delafield, Lewis L.
 De Lamar, Miss Alice
 Delaney, John B.
 Dembow, George F.
 de Montmorin St. Herem,
 Comtesse
 Denby, Edwin H.
 Dennison, Miss Diane
 Denny, Miss Rose
 De Rham, Mrs. Charles, Jr.
 Despard, Clement L.
 Detmer, Julian F.
 Deutsch, Mrs. Richard
 Devane, Mrs. Margaret
 Devins, Mrs. Margaret
 D'Humy, Miss Adine
 Dick, Mrs. F. R.
 Dickey, Mrs. Charles D.
 Diebold, Mrs. Albert
 Richard, Jr.
 Dietz, Gerry J.
 Dineen, Dr. Peter
 Di Santagnese, Miss Valerie
 Disney, Walt
 Dittrich, R. Keith
 Dix, Mrs. John A.
 Dix, Monroe L.
 Dodge, Mrs. C. E.
 Dodge, Donald D.
 Dolan, Dr. E. John
 Dominick, Gayer G.
 Dominick, Lamont
 Dondero, Miss Marietta
 Joan

Dorr, John V. N.
 Doscher, Mrs. Charles
 Doubleday, G. Chester
 Doubleday, George
 Doubleday, James M.
 Doubleday, Mrs. Nelson
 Dougall, Arthur B.
 Doughty, John C.
 Douglas, Lewis W.
 Drake, Mrs. Orville G.
 *Draper, Mrs. Charles D.
 Draper, Miss Ruth
 Dreher, Elmer
 Dresnick, Mrs. Natalie K.
 Droutzkoy, Mrs. Maria
 Theresa
 Drowne, Mrs. H. Russell, Jr.
 Duane, Mrs. Carolyn P.
 Duane, John P.
 *Du Bois, Mrs. Arthur
 Du Bois, Mrs. Arthur B.
 Du Bois, Miss Margaret
 Dubois, Randall M.
 Duke, Miss Doris
 Dumas, M. G.
 Duncan, Stuart
 Dunning, John S.
 Dunphrey, Robert F.
 Durant, Mrs. Donald
 Duryee, Samuel S.
 Dushkin, Mrs. Samuel
 Dutch, Miss Elizabeth
 Duys, John H., Jr.
 Earle, Miss Audrey V. E.
 Easby, Mrs. Dudley T., Jr.
 Eberstadt, F.
 Ebner, William F.
 Eckert, H. William
 Edelstein, Hon. David N.
 Edgar, James A.
 Edgar, William
 Edgerton, Mrs. Malcolm J.
 Eggert, Mrs. Carl
 Ehret, Harry W.
 Ehrich, Mrs. Jules
 Ehrmann, Dr. Rudolf R.
 Eidlitz, Mrs. Ernest
 Frederick
 Eisenberg, Richard
 Elia, Mrs. Joseph C.
 Eliscu, Miss Lita
 Eliscu, Webb
 Elkind, Arthur H.
 Elliman, Douglas L.

*Deceased

Ellis, Mrs. John C.
 Ellsworth, John E.
 Elvidge, Dr. Arthur R.
 Emanuel, Henderson
 Embury, Mrs. Jane S.
 Emmet, Mrs. Richard S.
 Engle, George D.
 English, Richard L.
 English, William H., Jr.
 Engstrom, C. William
 Erdmann, Dr. Albert J., Jr.
 Erlanger, Michael
 Erlanger, Milton S.
 Eskesen, Mrs. T. R.
 Estes, Thomas W.
 Evans, Mrs. Alice R.
 Evans, Miss Della J.
 Evans, Mrs. Morgan D., Jr.
 Everett, Miss Roberta
 Ewart, Lady Talbot
 *Ezra, Alfred
 Fagan, Mrs. Paul I
 Fagg, Charles C.
 Fajans, Irving J.
 Falconer, Miss Margaret
 Falk, Myron S., Jr.
 Faragoh, Miss Susan
 Farber, George
 Farber, I. J.
 Farley, Edward P.
 Farr, Dr. Charles E.
 Farr, H. Bartow
 Farr, John
 Farrelly, Theodore S.
 Fearey, Mrs. Morton
 Feierstein, Jack
 Feist, Seymour
 Felberbaum, Dr. Alfred S.
 Feldman, Paul A.
 Felton, Mrs. Cornelius C.
 Ferber, Fred
 Ferber, Dr. Robert
 Feuer, Master Jed
 Field, Dr. William W.
 Fiencke, Edward R. K.
 Figger, Miss F. Belle
 Filley, Mrs. Oliver D.
 Fincke, Reginald
 Findley, Paul B.
 Fine, Alexander
 Finkel, Leonard E.
 Fisher, Miss Beatrice
 Fishman, Irving
 Fisk, Mrs. Arthur L., Jr.

Fitch, Charles Marden
 Fitzhugh, Miss Marion E.
 Fitzpatrick, Paul
 Fitz-Randolph, John A.
 Flagg, Mrs. S. Griswold
 Fleischmann, Mrs. Udo M.
 Fleming, Mrs. Matthew C.
 Fluekiger, Miss Dora
 Whitman
 Foley, George W.
 Fondiller, Mrs. Richard
 Forbes, John Ripley
 Ford, Mrs. Howeth T.
 Ford, Sumner
 Forshay, Edward
 Forsyth, Miss Adele G.
 Forsyth, Mrs. Harry
 Fosdick, Mrs. Paulding
 Foss, Mrs. Wilson P., III
 Foster, Stephen
 Fowler, Miss Agnes
 Fowler, James A., III
 Fowler, Mrs. Robert H.
 Fox, Mrs. Alice
 Fox, Miss Alice Bleecker
 Fox, E. Tunnichliff
 Fox, Kelly
 Fox, Master Ralph
 Foy, Mrs. Byron C.
 Francescatti, Mrs. Yolande
 Francescatti, Zino
 Frank, Charles
 Frank, Mrs. Emma O.
 Frankel, Miss Betty
 Franklin, Curtis
 Franklin, Joseph K.
 Fraser, George C.
 Frederick, Karl T.
 Fredericks, Robert G.
 *Freeman, Miss Gertrude A.
 Freeman, Miss Gladys M.
 Freese, Fred J.
 Freiden, Jesse
 *Freund, Sandford H. E.
 Fricke, Mrs. D. Carl
 Frissel, Miss Toni
 Frost, Frederick G., Jr.
 Frost, John W.
 Frothingham, William I.
 Fuchs, Alan W.
 Fuller, Samuel L.
 Fulton, R. Arthur
 Fulton, Robert A., Jr.
 Funk, Wilfred

Futuyma, Douglas Joel
 Gadebusch, Paul H.
 Gaerste, John L.
 Gaillard, William D.
 Gair, Mrs. Robert
 Gaisman, Henry J.
 Galban, Eugenio
 Gale, C. Herbert
 Galland, Ned K.
 Gallatin, Mrs. Albert
 Gallatin, Goelet
 Gallick, John S.
 Galm, John
 Garrity, Devin
 Gauss, Mrs. D. Christian
 Gavan, Gordon S.
 Gaver, Gordon P.
 Gavin, Mrs. Michael
 *Cawtry, Lewis
 Gayley, Mrs. H. C.
 Geddes, Eugene M.
 Geddes, Gerald
 *Geer, George Jarvis
 Geer, Mrs. Langdon
 Geist, Milton S.
 Genth, William T.
 Gerber, Julius
 Gerngross, Leo
 Gersen, George H.
 Giampe, Dr. M. L.
 Gibbons, Douglas
 Gibson, Charles D. W.
 Gibson, Mrs. Harvey D.
 Gilder, Mrs. Rodman, Jr.
 Gillen, Harold W.
 Gilleran, Carroll
 Gillespie, Gardner F., Jr.
 Gilliard, E. Thomas
 Gilman, Mrs. Stanley H.
 Gimbel, Bernard F.
 Gimbel, Mrs. Louis S., Jr.
 Githens, Mrs. W. French
 Glazier, Mrs. Henry S.
 Gleason, James L., Jr.
 Goddard, Miss Jessamine
 Goddard, Morrill
 Goddard, Mrs. Morrill
 Godfrey, E.
 Godwin, Miss E. L.
 Godwin, Frederick M.
 Godwin, Owen
 Goldin, Mervin J.
 Goldman, Richard S.
 Goldmark, Dr. Carl, Jr.

*Deceased

Goldschlager, Sidney
 Goldschmidt, Master
 Anthony J.
 Goldschmidt, Mrs. Carel
 Goldsmith, Mrs. Milton M.
 Goodbody, Mrs. M. F., Jr.
 Goodell, Raymond B.
 Goodfriend, Dr. Milton J.
 Goodhue, Mrs. Charles E.
 Goodkind, Henry M.
 Goodman, Herbert S.
 Goodwin, James L.
 Goodyear, A. C.
 Goodyear, Mrs. A. C.
 Gordan, Mrs. John D.
 Gott, Rodney C.
 *Grace, Francis J. S.
 Grace, Mrs. Francis J. S.
 Grace, Oliver R.
 Grady, Mrs. H. A., Jr.
 Grady, Mrs. Hugh Alan
 Graeffe, Edward
 Graff, Howard
 Graham, Dr. John C.
 Grant, David E.
 Grant, L. J.
 Graves, George K., Jr.
 *Gray, Henry G.
 Gray, Reginald
 Greenfield, Frederick
 William
 Greenhall, Arthur M.
 Greenley, Howard
 Gregg, Peter A.
 Gresser, William
 Griffin, William V.
 Griffin, Alfred L.
 Grigsby, Miss Susanne
 Grinnell, Lawrence I.
 Grinnell, Dr. Robert S.
 Griscom, Mrs. Clement A.
 Grodenchik, Irving
 Groesbeck, Mrs. Herbert
 Grose, Waldo
 Gross, Max
 Gross, Simon
 Gross, Woolf Paul
 Grossman, Mrs. Cyrus S.
 Grosvenor, Melville B.
 Grosvenor, William
 Grout, Mrs. H. McIntyre, Jr.
 *Gruener, William C.
 Gruntal, Benedict H.
 Gunnison, Mrs. R. M.
 Gurlitz, Miss Elizabeth H. L.
 Gustafson, Robert L.
 Gutmuth, C. R.
 Gutheil, Paul G.
 Gutman, DeWitt
 Guttmacher, Dr. Alan F.
 Gwinn, Hon. Ralph W.
 Gwynne, Mrs. Arthur
 Habergritz, George
 Haberman, Mrs. Phillip, Jr.
 Haight, Mrs. Sherman Post
 Haldt, Harry Peale
 Haldt, Mrs. Harry Peale, Sr.
 Hall, Miss Adele
 Hall, Mrs. Carlyle W.
 Hall, Mrs. John H.
 Hallenborg, Mrs. Charles
 Halleran, Mrs. Arthur J.
 Halliday, Harold
 Hamerslag, Robert J.
 Hamilton, Sherwood
 Hamlin, Chauncey J.
 Hammett, Dr. John E.
 Hammond, Henry D.
 Hammond, Mrs. John Henry
 Hammond, Miss Natalie Hays
 Hammond, Paul
 Hammond, W. Lyle
 Handy, Truman P.
 Hansen, Mrs. Helen W.
 Hard, Mrs. De Courcy L.
 Hard, Miss Susan
 Harding, William Barclay
 Hardy, Charles J.
 Hardy, Brigadier John H.
 Harper, John
 Harper, L. K., 3rd
 Harriman, Mrs. W. Averell
 Harris, Mrs. Ben Jory
 Harris, Duncan G.
 Harris, John D.
 Harris, Mrs. John W.
 Harrison, Miss Gertrude F.
 Harrison, John P. S.
 Harrison, Wallace K.
 Hart, Mrs. A. S.
 Harvey, Dr. E. Newton
 Harvey, Mrs. Harold D.
 Harwick, Harry J.
 Haskell, Amory L.
 Haskins, Mrs. Caryl P.
 Hasse, Miss Claryce P.
 Hatch, Mrs. Aldis B., Jr.
 Hatch, Waldo M.
 Havemeier, Alfred F. J.
 Havemeyer, Henry O.
 Havender, Joseph, Jr.
 Hawkins, Dexter C.
 Hay, Clarence L.
 *Haymes, Miss E. Violet
 Haynes, Raymond B.
 Hayward, William F.
 Hazeltine, Dr. Alan
 Hearst, John R.
 Hecht, Fred
 Hecker, Mrs. Frances
 Heidsieck, Mrs. E. John
 Heinsheimer, Mrs. Norbert
 Heller, Albert E.
 Heller, Dr. John H.
 Heller, Tobias
 Heminway, John H.
 Hendelson, William
 Henderson, Alexander I.
 Herman, Dr. John R.
 Hernstadt, William L.
 Herrick, Newbold L.
 Hess, Mrs. Alfred F.
 Hess, Mortimer H.
 Hess, Mrs. Thomas B.
 Hessel, Sidney A.
 Hewins, Miss Elizabeth L.
 Heyde, Ernest R.
 Heydegger, Roland
 Heydt, Charles E.
 Heymsfeld, Ralph T.
 Hickox, Charles V.
 Hill, E. B.
 Hillas, Robert M.
 Hinman, Mrs. Edward
 Hirsch, Mrs. Walter A.
 Hirshon, Mrs. Walter
 Hirt, Miss Elizabeth
 Hitchcock, Mrs. Ethan A.
 Hitchcock, Horace G.
 Hobbs, Edmund S.
 Hobson, Miss Katherine
 Thayer
 Hochmuth, Raymond
 Hoffman, Miss Sally S.
 Hoffman, Mrs. William M. V.
 Hoffman, Mrs. William W.
 Hoffmann, Mrs. John
 Hoffmann, Mrs. Paul
 Hoffmann, Dr. Richard H.
 *Hogan, Bernard F.
 Holland, Mrs. Marianne
 Hollerith, Miss Natalie

*Deceased

Hollins, Harry B., Jr.
 Hollister, Mrs. Frederick K.
 Holmes, Mrs. Edward J.
 Holton, Charles W.
 Hopkins, Mrs. Peter S.
 Hopper, Miss Nathalie
 Hopson, Dr. George H.
 Horn, Adam J.
 Horn, Fraser M.
 Horn, John
 Horn, Stephen I.
 Horowitz, Seymour
 Hotchkiss, Edwin L.
 Houston, Miss Jessie F.
 Hoving, Walter
 Howard, Mrs. Howell
 Howell, Mrs. Edward W.
 Hoyer, F.
 *Hoyt, Elton, 2nd
 Hoyt, Mrs. Lydig
 *Hubbard, Mrs. John
 Hubbard, William H.
 Hubbs, Clark
 Hudson, Mrs. Lea
 Huffman, Mrs. Moore P.
 Huguley, Mrs. Arthur W., Jr.
 Hull, Mrs. Cora A.
 Hull, Mrs. Lytle
 Humphreys, Mrs.
 G. H., 2nd
 Hunnewell, Arnold W.
 Hunt, Mrs. Barron
 Hunt, Roy A.
 Hunter, Mrs. James H.
 Huntington, Miss
 Catherine C.
 Hurley, James S.
 Hutner, Bernie
 Hutton, Mrs. Alice P.
 Hutton, Mrs. Hubert E.
 Hyman, Dr. A.
 Hyman, Harry A.
 Ijams, Mrs. J. Horton
 Immerblum, Mrs. Edward
 Ingersoll, Mrs. R. V.
 Ireland, Rufus J., Jr.
 Irving, Michael
 Isaacs, Stanley M.
 Isbrandtsen, Mrs. G. M.
 *Iselin, Miss Georgine
 Iselin, Mrs. Lewis
 Iselin, Miss Louise M.
 Iseman, Harold M.
 Iversen, Miss Lillian
 Jackson, Mrs. Carle
 Jackson, Mrs. Clifford L.
 Jackson, John C.
 Jackson, William E.
 Jacobs, Stanley R.
 Jacobus, David D.
 James, Mrs. Henry
 Jameson, Edwin C., Jr.
 Jehl, Dr. Joseph R.
 Jenkins, Mrs. Farish A.
 Jenks, Mrs. Robert I.
 Jessup, Everett C.
 Jezer, Dr. Abraham
 John, John P.
 Johnson, Ernest C.
 Johnson, F. Raymond
 Johnson, J. Ford
 Johnson, T. T.
 Johnston, Scott
 Jones, Mrs. Charles
 Jones, Herman LeRoy, Jr.
 Jones, Cpl. Marvin L.
 Jones, Miss Ruth W.
 Jordan, Thomas V.
 Joyce, William R.
 Judge, Mrs. Jeanette T.
 Judson, Clay
 Jurka, Dr. Charles E.
 Juta, Jan
 Kadane, David K.
 Kagan, Leo B.
 Kahn, Gilbert Sherburne
 Kahn, Walter N.
 Kane, Charles B.
 Kantor, Leonard
 Kaplan, Mrs. Jacob M.
 Kaplan, M. C.
 Karelsen, Eph A.
 Karelsen, Frank E.
 Katz, Al
 Katzenstein, Mrs. Thea
 Kean, Robert Winthrop
 Keehn, Grant
 Kelley, Nicholas
 Kellogg, Mrs. Francis L.
 Kellogg, Mrs. Frederick R.
 Kelly, Robert M.
 Kelly, Thomas Smith
 Kent, Mrs. Richard Peabody
 Kerlin, Gilbert
 *Kernochan, Marshall R.
 Kessler, Joseph N.
 Ketcham, E. C.
 Kienbusch, Carl O.
 Kilborne, R. Stewart
 Kilham, Miss Teresa
 Kindler, Albert
 King, Miss Elizabeth
 Kingsford, Irving B.
 Kinkead, Miss Jennie H.
 Kinney, Mrs. Warren
 Kinzig, John
 Kirkham, William B.
 Klauck, Edward
 Klaussmann, Eric K.
 Klein, D. Emil
 Klingenstein, Joseph
 Klingenstein, Dr. Percy
 Klingmann, Albert
 Knapp, Dr. Arnold
 Kneeland, Mrs. Yale, Jr.
 Knight, Mrs. Augustus S.
 Knight, Mrs. Iris D.
 Knight, Rufus H.
 Knorr, Mrs. Neil
 Knowlton, Mrs. Hugh H.
 Knutson, Mrs. R. J. F.
 Koch, Edward R.
 Koehl, Albert
 Kopf, Joseph L.
 Korn, Harold
 *Kosmak, Dr. George W.
 Kraemer, Alfred Robert
 Kraft, Dr. Lisbeth M.
 Kramer, Mrs. Arthur J.
 Kratovil, Mrs. Emil A.
 Krebs, Francis Jerome
 Krech, Mrs. Shepard
 Krezek, K. M.
 Krueger, Richard G.
 Kubel, Miss Neissa
 Kuhn, August
 Kurzman, Charles C.
 Kynaston, Mrs. Percy L.
 Ladson, Mrs. Theresa E.
 Lamb, Dr. A. R., Jr.
 Lamb, Mrs. Gilbert B.
 Lambert, Dr. Adrian
 Langman, Mrs. Anne W.
 Langmann, Dr. Alfred G.
 Larsen, Karl
 Laszlo, Dr. Andras E.
 Lattin, C. Parker
 *Lauder, Edwin G., Jr.
 Laux, Louis J., Jr.
 Law, Frederick G.
 Law, Mrs. Gretchen O.
 Lawrence, Mrs. Charles L.

*Deceased

Lawrence, Mrs. Arthur B.
 Lawrence, Charles C.
 Laykind, Mrs. Henry G.
 Lea, Mrs. Robert Brooke
 Leahy, John W.
 Lee, Horace N.
 Lee, William
 Leeds, Mrs. William B.
 Leff, Herbert Wilson
 Lefferts, Mrs. Barent
 Lefferts, Mrs. Gillet
 Leidesdorf, S. D.
 Leland, Miss Anne Bronson
 Leo, Jack G.
 Leonard, Craigh
 Le Roy, Edward A., Jr.
 Levy, Abraham D.
 Levy, Mrs. B. J.
 Levy, Dr. David M.
 Levy, Philip K.
 Lewine, Robert W.
 Lewis, Clarence
 Lewis, Madison H.
 Lewis, Mrs. Robert J.
 Leykum, Robert J.
 Lieb, Dr. Charles C.
 Liebler, Walter D.
 Liebman, Julius
 Liebowitz, Benjamin
 Lilienthal, Howard L.
 Lincoln, Mrs. Frederick W.
 Lincoln, Mrs. William A.
 Lindeberg, H. T.
 Lindemann, Roland
 Lindey, Alexander
 Lipman, Mrs. Walter L.
 Litchfield, Lawrence, 3rd
 Littlejohn, Mrs. Hugh
 Littwitz, Alvin W.
 Livingston, Miss Angelica
 Livingston, John H.
 Lloyd, Christopher
 Locke, Otto Martin
 Lockett, Arthur H.
 *Loeb, Howard A.
 Loeb, Oscar
 Lombard, James M.
 Longstreth, Mrs. N. Lucas
 Longworth, Mrs. Nicholas
 Loomis, Mrs. Alfred Lee, Jr.
 Lorch, Arthur E.
 Lord, Walter
 Lovett, Mrs. Robert A.
 Low, Miss Harriette
 Low, Mrs. Madeleine M.
 Lowell, Mrs. Frederick E.
 Lowenstein, Leo
 Lowing, Mrs. Celia Smith
 Lowman, Lawrence W.
 Lowther, Mrs. Florence deL.
 Ludwig, Jesse J.
 Lueder, C. G.
 Lunenfeld, Norman
 Lunt, Storer
 Lyon, Alfred E.
 Lyon, Miss Ruth
 Lyons, Mrs. G. Jarvis
 Lytton, Budd
 MacDonald, Henry
 Mack, Mrs. Walter S.
 MacKay, Dr. Kenneth C.
 MacKay, Mrs. Malcom S.
 MacLaury, Mrs. Robert M.
 Macrae, Elliott B.
 Maeder, Mrs. John S.
 Magid, Leon
 Mali, Mrs. Henry J.
 Maller, Dr. J. William
 Mallinson, Hiram R.
 Mallinson, Mrs. Hiram R., Sr.
 Mallory, Mrs. G. Barron
 Malsin, Raphael B.
 Mancke, Mrs. Henry
 Manecke, Dr. Phillip, Jr.
 Maneely, Edward F.
 Manning, James H.
 Manny, W. Roy
 Manship, Paul
 Markel, Lester
 Marks, Arthur W.
 Marks, Miss Barbara Edna
 Marsh, Alonzo K.
 Marsh, Mrs. S. H.
 Marshall, Miss Edith G.
 Marshall, Louis
 Marsters, Mrs. Arthur A.
 Marston, Hunter S.
 Martin, Alastair B.
 Martin, Bradley
 Martin, Miss Elizabeth P.
 Martin, Mrs. Grinnell
 Martin, Shelton E.
 Marvin, Langdon P.
 Marvin, Mrs. Langdon P.
 *Maske, Mrs. Gunnar
 Mason, L. Randolph
 Maude, Mrs. E. F.
 Maurice, Mrs. Jane H.
 Maxwell, James K.
 May, Mrs. Charles H.
 Mayer, Mrs. Edgar
 Mayer, Harold C.
 Mayer, Mrs. Kathryn M.
 Mayer, Mrs. William C.
 Maynard, Mrs. Eric M.
 Maynard, Mrs. Walter
 McAlpin, Mrs. Allan H., Jr.
 McAneny, Mrs. George
 McCaffrey, Eugene R.
 McCandless, Mrs. William
 McCance, Mrs. Thomas
 McCanliss, Lee
 McCarter, Thomas N.
 McClure, Dr. H. Elliott
 McCrea, Mrs. James A.
 McCurdy, Mrs. J.
 Arrison, 2nd
 McDonnell, Hubert
 McFadden, Louis E.
 McGinty, Mrs. Ruth
 McGovern, John T.
 McGrath, F. Sims
 McGuckin, B. F.
 McIntosh, Allan J.
 McKenzie, Mrs. W. M.
 McKittrick, Thomas H.
 McNulty, Harold C.
 McVeigh, Charles S.
 McVeigh, Mrs. Charles S.
 McVickar, H. Kane
 Mead, Giles W., Jr.
 Mechin, R. J.
 Medina, Harold R.
 Meeder, William H., Jr.
 Meek, Mrs. Samuel W.
 Meierdiercks, Miss Karen
 Mellon, Charles Henry
 Meltzer, Henry
 Menary, Robert V.
 Mendel, Mrs. Margaret P.
 Mendelson, Herbert
 Merkel, Albert H.
 Merrill, Charles E.
 Merrill, Mrs. Pauline G. W.
 Merritt, Dr. Katharine
 Metcalf, Manton B., Jr.
 Metraux, Master Daniel
 Metzler, Henry W.
 Meyer, Eugene
 Meyer, George L.
 Meyer, J. Edward
 Michalis, Clarence G.

*Deceased

Michelbacher, G. F.
 Midinian, Mrs. S. H.
 Milbank, Robert W.
 Milch, Ernest M.
 Miles, Sanford
 Miller, C. Blackburn
 Miller, Frank W.
 Miller, Lawrence McK.
 *Miller, Mrs. Martha H.
 Miller, Nathan
 Miller, Mrs. Ralph R., Jr.
 Miller, Roswell
 Millhiser, Mrs. Clarence
 Mills, R. C.
 *Milmine, Mrs. C. E.
 Milner, Richard
 Milton, David M.
 Miner, Mrs. Eunice Thomas
 Minetto, Miss Caroline
 Minor, Mrs. Clark H.
 Minster, Walling
 Mitchell, Mrs. Ashmore L. L.
 Mitchell, Cornelius
 Mitchell, Mrs. J. Murray
 Mitchell, Mrs. S. Roger
 *Mitchell, William D.
 Mobley, Nathan
 Mochi, Ugo
 Moench, Gerard L.
 Moffat, Donald
 Mohun, C. Peabody
 Mol, A. A.
 Molnar, Nicholas M.
 Moore, Mrs. Edward S., Jr.
 Moore, Garry
 Moore, John I.
 Moore, Mrs. S. W.
 Moorehead, Ludwig K.
 Morawetz, Mrs. Victor
 Morgan, Alexander P.
 Morgan, Junius S.
 Morgan, Robert W.
 Morris, Rev. Dr. DuBois S.
 Morris, Mrs. Robert H.
 Morrison, Mrs. Charles King
 Morse, Edward
 Mortimer, Mrs. Stanley G., Jr.
 Mosle, Mrs. A. Henry
 Moulton, Francis S.
 Moulton, Henry H.
 Mueller, Miss Augusta F.
 Mueller, Miss Louise M.
 *Muhlfeld, F. J.
 Muhlfeld, Frank J., Jr.

Mullaney, Eugene L.
 Muller, Miss Elizabeth
 Mulroney, Thomas M.
 Muma, John R.
 Mumford, George S., Jr.
 Munn, Ector O.
 Munroe, Miss Cynthia L.
 Murin, Theodore
 Murphy, Mrs. John E. B.
 Murray, Mrs. Edward E.
 Murray, Miss Eleanor
 Murray, Matthew J.
 Muschenheim, Fred A.
 Myerson, Joseph G.
 Myrick, Mrs. Julian S.
 Naidamast, Daniel
 Namm, Mrs. Benjamin H.
 Nast, Mrs. Ilse
 Nayfack, Bertram S.
 Nazar, Francisco
 Nebolsine, Miss Irina
 Nelkin, Morton
 Nesmith, Col. James, 2nd
 Neuberger, Roy R.
 Newberg, Mrs. Andre
 Newburger, Alfred H.
 Newell, Mrs. Edward T.
 Newhall, Donald V.
 Newton, Howard M.
 Newton, William L., Jr.
 Nichols, Charles W., Jr.
 Nichols, Mrs. Francis T.
 Nickelsberg, Miss Elaine M.
 Nickerson, Major Hoffman
 North, Mrs. Richard A.
 Noyes, Mrs. Dorothy Grinnell
 Nuhn, Mrs. Clifford J.
 Nyden, Gustaf A.
 Oak, Miss Dorothy
 Oakes, Mrs. Malcolm
 Oakley, Mrs. H. Wayne
 Oakley, Mrs. R. Lawrence
 Oastler, Mrs. Frank R.
 O'Brien, Morgan J., Jr.
 O'Connell, Marshall
 O'Connor, Theodore G.
 Oenslager, Donald M.
 Oesterheld, Mrs. Arthur
 Oestricher, Sylvan
 Offerman, John
 *Ogden, Charles W.
 *Ogden, Miss Mary F.
 Ogilvie, W. E.
 Olds, Mrs. Robert E.

Opdyke, Pieter J.
 Orden, Miss Ronnie Phyllis
 Oresman, A. Louis
 Ortner, Louis M.
 Orvis, Mrs. Hardin
 Osborne, Carl N.
 Osborne, Lithgow
 Otheman, Roswell C.
 Ottenberg, James S.
 Page, Miss Ione
 Page, Nelson L.
 Page, Mrs. Samuel M.
 Pagenstecher, Miss Bertha
 Paige, Mrs. Douglas
 Paine, Richard C.
 *Palmer, Leslie E.
 Papez, Mrs. Constance G.
 Park, Mrs. H. Halsted
 Parker, Miss Caroline M.
 Parker, Rev. Everett C.
 Parkinson, Mrs. John, Jr.
 Parmelee, Miss Elizabeth
 Parr, F. Van S., Jr.
 Parsons, Dr. Herbert
 Parsons, Mrs. J. Graham
 Parsons, Dr. William Barclay
 Paton, Dr. R. Townley
 Patterson, Dr. Russel H.
 Paul, Charles
 Paul-Wilcox, Miss Iris J.
 Payson, Mrs. Charles S.
 Peck, Mrs. Charles Russell
 Peck, Stephen Rogers
 Pennoyer, Mrs. Paul G.
 Perry, Miss Elaine
 Pfeiffer, Timothy N.
 Pfeiffer, Mrs. Timothy N.
 Pflieger, Robert P.
 *Pforzheimer, Walter
 *Phelps, Dr. Gouverneur
 Morris
 *Phelps, Mrs. Sheffield
 Phelps, William H., Jr.
 Philipp, Mrs. Stone
 Phillips, Master Kenneth E.
 Phillips, Dr. Walter
 Picker, Mrs. Harvey
 Pickman, Dudley L., Jr.
 Pierce, Allen
 Pierce, Mrs. Henry B.
 Pierce, Martin G.
 Pinkerton, Robert A.
 Pintauro, Dr. F.
 Place, Mrs. Hermann G.

*Deceased

Platt, Mrs. Frank H.
 Platt, Livingston
 Plohn, Charles
 Poe, Miss Frances
 Pollard, L. Douglas
 Pomeroy, Daniel E.
 Pons, Lily
 Porter, Mrs. Cheever
 Porter, Mrs. N. V.
 Post, Miss Evelyn A.
 Post, Mrs. John E.
 Post, William G.
 Potter, Bronson M.
 Potter, Henry C.
 Potter, L. De Grove
 Potter, Miss Mary G.
 Pottier, Auguste R.
 Potts, William R.
 Pough, Richard H.
 Powers, Francis C.
 Powers, Mrs. Helen L.
 Powers, Joshua B.
 Pratt, Auguste G.
 Pratt, Mrs. Frederic R.
 Pratt, Mrs. Harold I.
 Pratt, Mrs. John T.
 Pratt, Mrs. Richardson
 Prentis, Edmund A.
 Prentiss, Marshall
 Prentiss, Mrs. Marshall
 Price, Miss Mary Lyle
 Price, Samuel
 Prince, Richard
 Pruzan, Mrs. Max
 Puckhafer, George R.
 Punyanitya, Thonglaw
 Purdy, Herbert McLean
 Quaile, Mrs. Emerson B.
 Rabenau, Herman
 Radley, Mrs. John J.
 Radlhammer, Michael M.
 Rainbeau, Arthur
 *Rainey, Mrs. Roy A.
 Raisler, Robert K.
 Rand, Miss Lucinda H.
 Randall, Mrs. D. J.
 Ranger, Stanley
 Raymond, Miss Catharine
 Read, Duncan H.
 Reboul, Mrs. J. B.
 Redmond, Roland L.
 Reed, Carl S.
 Rehan, Miss Mary
 Reichert, Robert J.
 Reid, Dr. F. K.
 Reid, Mrs. Fergus, Jr.
 Reilly, John A.
 Reilly, Mrs. Marjorie
 Reimers, Carl
 Reisch, Dr. Milton
 Reisner, William P., Jr.
 Reisweber, Mrs. G. B.
 Renshaw, Mrs. Paul
 Rentschler, Mrs. Gordon S.
 Resor, Stanley
 Resor, Mrs. Stanley R.
 Reynal, Eugene
 Reynolds, D. S.
 Rhinelander, Philip, 2nd
 Ricci, Mrs. Phyllis M.
 *Rice, Grantland
 Richard, L. A.
 Richards, Mrs. Junius A.
 Richards, Miss Ruth
 Richardson, Arthur B.
 Richter, Miss Adelaide I.
 Richter, Joseph
 Rick, Miss Karen
 Riley, Dr. Henry Alsop
 Rindlaub, Mrs. W. W.
 Ripley, Paul M.
 Rives, F. Bayard
 Robb, Alexander F.
 Roberts, Fred E.
 *Roberts, Owen F.
 Robinsohn, Jacob
 Robinson, Edward
 Robinson, Miss Pauline L.
 Rochow, Donald S.
 Rockefeller, Mrs. David
 Rodd, Thomas, 3rd
 Roehl, Mrs. Winslow J.
 Roessel, Mrs. M.
 Rogers, Mrs. Benjamin
 Rogers, Mrs. Edward A.
 Rogers, Mrs. Francis
 Rogers, Herman L.
 Rogers, Hubert E.
 Rogers, Russell C.
 Rogerson, Mrs. Stella M.
 Roosevelt, George E.
 Ropes, Chapman
 Rorimer, James J.
 Ros, Mrs. Salvador
 Rosado, Albert J.
 Rosato, Rocco
 Rose, Miss Mary
 Rosenbaum, Stephen
 Rosenberg, Charles
 Rosenberg, Edwin A.
 Rosenberg, Mrs. Edwin
 Rosenberry, Mrs. Samuel L.
 Rosenfeld, Saul M.
 Rosenthal, Paul
 Rosner, Dr. Albert A.
 Ross, Kip
 Rossback, Max J. H.
 Roth, Mrs. Andrew Winton
 Roth, Mrs. Philip
 Rothchild, Miss Marie-
 Helene
 Rothchild, Miss Starr
 Rothschild, Mrs. Walter N.
 Rougon, Mrs. Louis J.
 Rounsevel, Mrs. Ashton
 Rous, Mrs. Arthur
 Rouse, Harold A.
 Rowell, Mrs. Frank B.
 Ruedin, Pierre
 Ruffolo, Mario A.
 Ruhe, Louis
 Ruhm, Mrs. Herman D., Jr.
 Rumsey, Mrs. David
 Rumsey, Dr. William L.
 Russell, Harry A.
 Russell, Miss Joan E.
 Rutherford, Lewis
 Rutherford, Winthrop, Jr.
 Ryan, Mrs. John Barry
 Ryder, John H.
 Ryhiner, Peter R.
 Sachs, Teviah
 Sackett, Charles B.
 Sada, Diego G.
 Sadowsky, Carl R.
 Sage, Miss Elise E.
 Salmon, Mrs. Walter J.
 Salomon, Morton F.
 Sammis, Donald Stuart
 Samuel, Ralph E.
 Samuels, Mitchel
 Sandalgi, Rev. Paul J.
 Sanderson, John
 Sander, Paul
 Saner, William R.
 *Sanford, Warren B.
 Sanger, Mrs. Elliott M.
 Sartorius, Herman
 Satterlee, Hugh
 Sauerbrey, William A.
 Sauter, Fred
 Savage, Mrs. T. F.

*Deceased

Sawyer, Mrs. Albert E.
 Scales, Mrs. Mildred B.
 Scanlon, Jack, Jr.
 Schaefer, Rudolph J.
 Schauman, Arnold J.
 Schenck, Charles
 Schenck, Charles L.
 Scherrer, Miss Clara A.
 Schetty, Frank R.
 Schiemann, Herbert F.
 Schlesinger, Mrs. Edwin
 Schlesinger, Ferdinand G.
 Schley, Mrs. Kenneth B.
 Schlosser, Fred
 Schmidhauser, Harold B.
 Schmones, B.
 Schneider, Franz
 Schobitz, Raymond, Jr.
 Scholle, Hardinge
 Schonbrunn, S. A.
 Schortman, Dr. Edward F.
 Schroder, George H.
 Schubert, Mrs. Quentin
 Melling
 Schultz, Harry O.
 Schulz, Miss Katie
 Schulz, William M.
 Schwamm, Harvey L.
 Schwartz, Mrs. Edward R.
 Schwartz, George I.
 Schwarz, Frederick A. O.
 Scofield, Robert R.
 Scott, Henry C.
 Scott, S. Spencer
 Seagle, Miss Louis Peekham
 Sears, Mrs. Philip S.
 Secor, Timothy Jay
 Seibert, Robert F.
 Seitz, Mrs. Richard
 Selby, John C.
 Selig, Mrs. R. F.
 Seligman, Eustace
 Sergievsky, Mrs. Boris
 Serling, Dr. Maurice E.
 Shanahan, T. J.
 Shapiro, Marc R.
 Sharp, Mrs. L. I.
 Sheffield, Frederick
 Sheffield, Mrs. James R.
 Shelby, Morris
 Sheldon, Mrs. Charles
 Shepherd, George E.
 Sheps, Dr. Jack
 Sherer, Dunham B.
 Sherman, Gary Lawrence
 Sherman, Mrs. Louise
 Shields, James E.
 Shiffman, Dr. Harry
 Shippee, Lester E.
 Shrewsbury, Miss Ethel M.
 Siebern, Henry W.
 Siegel, Max
 Silver, Robert L.
 Simmon, Rudolph
 Simmonds, Mrs. L. M.
 Simon, Dr. John L.
 Simon, Mrs. Robert E.
 Simon, Robert E., Jr.
 Singer, Arthur B.
 Singer, Herbert M.
 Sinnigen, Mrs. Walter C.
 Slade, Mrs. C. F. Roe
 Slavic, Mrs. Fred
 Sleik, Henry
 Sloan, Nathan
 Sloane, John
 Slotter, Mrs. Charles F.
 Smadbeck, Dr. Warren
 °Smith, Blanchard
 Smith, Donald N.
 Smith, Ellison Ward
 Smith, Mrs. Franklin G.
 Smith, Mrs. Harold DeWitt
 Smith, Mrs. H. J.
 Smith, Howard Caswell
 Smith, Lee Thompson
 Smith, Maxim
 Smith, Sherwin D.
 Smyth, Miss Barbara Sally
 Smyth, Herbert C.
 Snider, Miss Nancy
 Constance
 Snow, Richard B.
 Snowden, Miss Sandra
 Snyder, Mrs. Frank V.
 Snyder, Peter V., Jr.
 Snyder, Robert A.
 Snyder, Robert H., Jr.
 Soderberg, Gustave J., Jr.
 Soja, Thomas H.
 Solkow, Saul
 Soria, Mrs. Dario
 Speakman, Miss Russel
 Speert, Mrs. Harold
 Speiden, Mrs. Hammond
 Sperber, Miss Myrtle A.
 Speyers, Julian R.
 Spurr, Joseph James, 2nd
 Squires, George R.
 Stanley, Alfred T.
 Stanley, Samuel F.
 Stanwick, Charles A.
 Starzel, Mrs. F. J.
 Statham, Noel
 Steever, Edgar Z., 4th
 Steffanson, Hokan B.
 Stein, Mrs. Ernest
 Steinhart, Samuel C.
 Sterling, Joseph S.
 Sterling, Mrs. Robert D.
 Stern, Edward N.
 Stern, John Philip
 Stetten, Mrs. DeWitt
 Stevens, Mrs. Basil M.
 Stevens, John P., Jr.
 Stevens, Miss Viola G.
 Stewart, Miss G. Marieta
 Stewart, Percy M.
 Stewart, William A. W.
 Stiger, Miss Frances A.
 Stillman, C. D.
 Stoll, Charles H.
 Stone, David B.
 Storck, John
 Storer, John H.
 Stout, Gardner D.
 Stowe, Mrs. Lyman Beecher
 Straka, Jerome A.
 Straub, Paul A.
 Straus, Mrs. Nathan
 Strawbridge, Mrs. R. E.
 Strax, Dr. Philip
 Streck, Dr. Charles B.
 Streeter, Daniel W.
 Streeter, Edward
 Stringfellow, Miss Ethel Grey
 Stritter, Miss E. Eleanor
 Strong, Benjamin
 Strong, Mrs. Charles H.
 Stuart, Mrs. David
 Stuart, Lyall L.
 Stumpp, Mrs. Edwin A.
 Stupp, Mrs. C. G.
 Sudman, Victor J.
 Sully, Wilberforce, Jr.
 Sulzberger, Dr. Marion B.
 Summers, George W.
 Sumner, Miss Estelle
 Sunderland, Edwin S. S.
 Swan, Joseph R.
 Swanson, Dr. Fritz J.
 Swenson, Mrs. R. B.

°Deceased

Swope, Herbert Bayard
 Sydney, Manuel G.
 Symington, Charles J.
 Taber, Mrs. John S.
 Tabor, Dr. Jack H.
 Taddiken, Miss Melita
 Taggart, Mrs. Rush
 Tansill, J. Duncan
 Tarbox, Mrs. Russell Lord
 Taylor, Durand
 Taylor, Dr. Gurney
 Taylor, John W.
 Taylor, Kenneth
 Taylor, Mrs. William R. K.
 Taylor, Willis H., Jr.
 Teal, John J., Jr.
 Thees, John D.
 Thomas, Mrs. George P.
 Thomas, H. Gregory
 Thomas, Mrs. Howard L.
 Thomas, Mrs. Landon
 Thomas, Norman M.
 Thompson, D. G. Brinton
 Thompson, Mrs. Milton
 *Thompson, Mrs. Samuel A.
 Thorne, Mrs. John Norrish
 Thurlow, John W.
 Thursby, Sherman
 Ticknor, Mrs. W. D.
 Tiedemann, Henry F.
 Tinker, Mrs. Edward R.
 Tinning, Herbert P.
 Tipper, Frederic W.
 Titley, Dr. Mildred S.
 Titus, Robert R.
 Titus, Mrs. Robert R.
 Tourtois, Fernand R.
 Tousey, B. C.
 Towbis, Mrs. Shirley
 Townsend, Mrs. Frank P.
 Townsend, Mrs.
 Franklin, Sr.
 Towsley, Prentice W.
 Traphagen, Hugh M.
 Traphagen, Mrs. J. C.
 Trask, Mrs. Frederick K.
 Trattler, Charles S.
 Treat, Miss Dorothy A.
 Trimble, Mrs. M. Brown
 Trumbull, Walter
 Tucker, Mrs. Carll, Jr.
 Tudor-Hart, Mrs. Percyval
 Tunney, Mrs. Gene
 Turnbull, Mrs. Richard
 Turner, John B.
 Tweed, Harrison
 Valentine, Miss
 Marguerite E.
 Valentine, Mrs. S. Binford
 Van Alstyne, David, Jr.
 Van Alstyne, Mrs. Grace A.
 Van Bomel, Robert
 Vandivert, William W.
 Van Gorder, George
 Villa, A. P.
 Viosca, Harry
 Vogeley, Mrs. W. Roebeling
 Volk, Kurt H.
 Von Bergen, William H.
 Wacker, Mrs. Arthur A.
 Waddell, K. C.
 Wadsworth, Dyer
 Wagner, Richard
 Wagstaff, Mrs. David
 Wagstaff, Hunt T.
 Wakeman, John
 Walden, Ulysses D. E.
 Walker, Bradley H.
 Walker, Miss Elizabeth
 Walker, Joseph
 Walker, J. Philip
 Walker, Louis E.
 Walker, Mrs. Samuel P.
 Walker, Samuel Sloan
 Wallace, Charles J.
 Wallin, Mrs. Ann B.
 Wallin, Freeman F.
 Wallin, Miss Grace E.
 Wallin, Miss Mary
 Walsh, James W., Jr.
 Walsh, Thomas J.
 Walther, Francis
 Walton, Harold L.
 Warburg, David
 Warburg, Gerald F.
 Ward, E. S.
 Ward, Mrs. Kenneth
 Waring, Lawrence
 Warner, Ira F.
 Warnshuis, Mrs. A.
 Livingston
 Warren, Gordon H.
 Warren, John D.
 Warriner, Robert S.
 Warshaw, Saul
 Waterbury, Miss Florance
 Waterman, Mrs. Frederick
 W., 3rd
 Waterman, Philip M.
 Waters, Mrs. F. S.
 Watjen, Louis C.
 Watson, Bruce
 Watson, Thomas J.
 Watts, Edward E., Jr.
 Wauchope, Capt. George M.
 Way, Miss Ruth
 Wayne, Harold L.
 Weathers, Mrs. Eliot B.
 Webb, Vanderbilt
 Weber, Julius
 Weems, F. C.
 Weems, Mrs. F. C.
 Weigert, Hugo
 Weil, Walter L.
 Weilbacher, Miss Estelle
 Weinberg, Mrs. Charles
 Weinberg, Charles L.
 Weinberg, Dr. I.
 Weinman, Major A. N.
 Weinstock, Mrs. Gerard
 Weisman, Dr. Abner I.
 Weismann, Harold A.
 Welch, Francis C.
 Weld, Mrs. Edward M.
 Weldon, Samuel A.
 Wentink, Mrs. J. G.
 West, John P., Jr.
 White, Mrs. Alexander M., Jr.
 White, Richardson, Jr.
 Whitehouse, Sheldon
 *Whitehouse, William F.
 Whitman, Gerald
 Whitman, William, Jr.
 Whitney, Mrs. Cornelius V.
 Whitney, Edward A., Jr.
 Whitney, Mrs. George
 *Whitney, John
 Whittaker, Mrs. Wallace
 Whittlesey, Melzar M.
 Wicke, Mrs. Carl
 Wiener, Geoffrey R.
 Wiese, Mrs. Caroline .
 V. der W.
 Wiesel, Dr. Benjamin
 Wilbur, Miss Hazel L.
 Wilder, George J.
 Wilder, Neil MacDonald
 Wile, Edwin
 Wilkinson, Dr. Joseph B.
 Wilkinson, Mrs. Lawrence
 Wiley, Prof. Charles H.
 Williams, Douglas

*Deceased

Williams, Mrs. Douglas
 Williams, Eliot L.
 Williams, Timothy C.
 Williams, Dr. Walter J.
 Williams, Wheeler
 Williamson, Edward
 Wilner, Ellis H.
 Wilson, Horace H.
 Wilson, Orme
 Wilson, R. Thornton
 Windisch, Richard P.
 Winkhaus, Mrs. John T.
 Winslow, Mrs. T. Scudder
 Wissel, Charles
 Wocel, Frank E., Jr.
 Wocel, Mrs. Janet M.
 Wolf, Mrs. Robert

Wolf, Stanley
 Wolfe, Alan L.
 Wolfe, Arthur
 Wolff, Mrs. J. D.
 Wolfson, Harry C.
 Wood, Mrs. Willis D.
 Woodruff, Miss Helen M.
 Woodward, Mrs. William
 Woolf, Mrs. Louis J.
 Woolley, John E.
 Woolsey, David Ogden
 Worcester, Mrs. Wilfred J.
 Wormser, Felix E.
 Wormser, Mrs. Max E.
 Wortis, Dr. S. Bernard
 Wright, Harrison
 Wulfing, F. W.

Wyeth, Marion Sims
 Yancey, Rev. P. H., S. J.
 Yepez, F. Fernandez
 °Ylla
 Young, George W.
 Zahn, Philip
 Zappler, Georg
 Zausner, Hy
 Zepp, Dr. C. P.
 Ziegler, William, Jr.
 Ziesing, Mrs. Hibben
 Ziminski, Stanley W.
 °Zinsser, Rudolph
 Zinsser, William H.
 Zuccaro, Master Stephen
 Zurmuhlen, Frederick H.

SUMMARY OF MEMBERSHIP

December 31, 1955

Benefactors	8
Founders in Perpetuity	15
Founders	14
Associate Founders	6
Patrons	28
Life Members	374
Contributing Members	793
Annual Members	1,794
Honorary Members	3
Fellows	88 ✓
Research Associates	2
Corresponding Members	8
<i>Total</i>	3,133

BY-LAWS OF THE NEW YORK ZOOLOGICAL SOCIETY

ARTICLE I • MEMBERS

SECTION 1. The present members and such others as hereafter shall become members in accordance with these by-laws shall be the members of this Society.

SEC. 2. Annual and contributing members shall be elected by the Board or Executive Committee and, upon election, shall qualify for such membership by payment of dues for the first year commencing on the date of their election.

SEC. 3. Annual dues of annual members shall be \$15, and of contributing members \$25. Any person who shall fail to qualify within three months after his election shall be deemed to have declined his election.

SEC. 4. Any member who shall fail to pay his annual dues within three months after notice that they have become due and demand therefor, shall cease to be a member of the Society. He may, however, be reinstated by the Board or Executive Committee for good cause shown.

SEC. 5. Any person who shall have donated to the Society, in the aggregate, cash or the equivalent in value of any of the following amounts shall be eligible for election, by the Board or Executive Committee, to the class of membership appearing opposite such amount:

\$ 300.00	Life Membership	\$ 5,000.00	Founder
\$1,000.00	Patron	\$10,000.00	Founder in Perpetuity
\$2,500.00	Associate Founder	\$25,000.00	Benefactor

An annual member who has paid dues for five consecutive years and a contributing member who has paid dues for three consecutive years, may thereafter, at any time, upon payment of the difference between the aggregate dues already paid and \$300, but in no case less than \$100, be elected a Life Member. Upon the death of a trustee, his widow shall be eligible for election, by the Board or Executive Committee, to Life Membership.

SEC. 6. The Board or Executive Committee may elect to membership in the following classes persons who, in their judgment, have achieved the qualifications hereinafter specified:

Fellows:—Persons of marked scientific achievement.

Honorary Members:—Persons who have rendered distinguished services in the science of zoology or natural history.

Corresponding Members:—Persons who have rendered marked services to the Society through correspondence.

SEC. 7. All but annual and contributing members shall be exempt from payment of annual dues.

SEC. 8. Benefactors and Founders in Perpetuity shall have the power to designate their respective successors, who shall thereupon be entitled to all the rights and privileges of their predecessors, including the right in turn to designate their successors. Such designation shall be in writing indorsed or attached to the certificate of membership or by last will and testament.

ARTICLE II • PRIVILEGES OF MEMBERS

SECTION 1. Each annual and contributing member shall be entitled to a member's ticket, ten tickets of admission to the Zoological Park and Aquarium

on pay days, a copy of the annual report, a copy of the official periodical publication of the Society, and shall be entitled also to the privileges of the Administration Building at the Zoological Park.

SEC. 2. Life Members shall be entitled to all the privileges of annual members and also to ten additional tickets of admission to the Zoological Park and Aquarium on pay days.

SEC. 3. Benefactors, Founders in Perpetuity, Founders, Associate Founders and Patrons shall be entitled to all the privileges of Life Members and also to receive the Society's scientific publication "Zoologica."

SEC. 4. A member's ticket, issued annually, shall admit the member and his immediate family to the Zoological Park and Aquarium on pay days and to lectures and special exhibitions. It may be used by the member's immediate family.

SEC. 5. Each member, other than a member elected pursuant to Article I, Section 6, shall be entitled to one vote at each meeting of the Society.

SEC. 6. Any member who shall fail to comply with the provisions of these by-laws may be suspended from the privileges of membership or dropped from the rolls of the Society, by a majority vote of those present at a duly constituted meeting of the Board or Executive Committee.

ARTICLE III • MEETINGS OF THE SOCIETY

SECTION 1. The Annual Meeting of the Society shall be held on the third Tuesday in April in each year, or on such day thereafter and at such time and place as may be designated by the Board or Executive Committee.

SEC. 2. Special Meetings of the Society may be called upon order of the President or Chairman of the Executive Committee or on the written request of ten Trustees delivered to the Secretary.

SEC. 3. Notice of each annual and special meeting of the Society, stating the time, place and purpose thereof, shall be mailed, not less than ten nor more than forty days before such meeting, to each member at his address last recorded with the Secretary.

SEC. 4. At all meetings of the Society twenty members shall constitute a quorum.

ARTICLE IV • BOARD OF TRUSTEES

SECTION 1. The property, affairs and business of the Society shall be managed and controlled by a Board of Trustees consisting of thirty-six members divided into three equal classes, together with the Mayor and the Commissioner of Parks of the City of New York who shall be members *ex officio* of the Board. Each class of elected trustees shall hold office for three years and until its successors are elected. The term of office of one class shall expire each year and its successor shall be elected at the annual meeting of the Society.

SEC. 2. No person shall be eligible for election to the Board unless he shall be either a Benefactor, Founder in Perpetuity, Founder, Associate Founder, Patron or Life Member and, excepting to fill vacancies, unless his name shall have been posted as a candidate by the Nominating Committee or by not less than ten members in writing in a conspicuous place in the office of the Society not less than ten days before the annual meeting.

SEC. 3. Vacancies in the Board may be filled for the unexpired term by the Board or Executive Committee at any regular or special meeting, by ballot, by a majority vote of the members present; but no person shall be eligible for election to fill a vacancy unless he shall have been nominated at a meeting of the Board or Executive Committee held not less than four weeks prior thereto.

SEC. 4. The Board shall hold an annual meeting in December in each year, on a date and at a time and place designated by the Board or Executive Com-

mittee. Other meetings of the Board may be called upon order of the President or Chairman of the Executive Committee or at the written request of five Trustees delivered to the Secretary. Twelve Trustees shall constitute a quorum.

SEC. 5. Notice of each meeting of the Board shall be mailed to each Trustee at least seven days before the annual meeting and at least three days before any other meeting.

SEC. 6. A Trustee who shall fail to attend three consecutive meetings of the Board, without being excused by the Board, shall be deemed to have resigned as a Trustee.

SEC. 7. The Board at its annual meeting in each year shall appoint three standing committees — an Executive Committee, a Finance Committee and an Auditing Committee — each of which shall serve for one year, or until its successors are appointed. The Board or Executive Committee may appoint such other Committees and delegate to them such powers as they may deem advisable or necessary. The President shall designate the Chairman of each committee. Any vacancy in any committee including the Executive Committee, however occurring, shall be filled by the Board or Executive Committee. Except as to the Executive Committee, a majority of a committee shall constitute a quorum for the transaction of business, but all action shall be decided by a majority vote of the members of the committee.

ARTICLE V • OFFICERS

SECTION 1. The Board of Trustees at its Annual Meeting in each year shall elect a President, a First Vice President, a Second Vice President, a Treasurer and a Secretary from among the Trustees. The said officers shall hold office respectively for the ensuing year and until their successors are elected. Any vacancy for an unexpired term may be filled by the Board or Executive Committee.

SEC. 2. The President shall preside at all meetings of the Society and of the Board, exercise general supervision of the affairs of the Society, from time to time call attention of the Board to such subjects as in his opinion require consideration. Unless otherwise ordered by the Board or Executive Committee, he shall execute all contracts and instruments on behalf of the Society, and shall exercise the usual functions pertaining to his office. He shall be a member *ex officio* of all standing committees.

SEC. 3. The Vice Presidents, in order of seniority, in case of death, absence, resignation or disability of the President shall perform his duties and exercise his powers.

SEC. 4. The Treasurer shall supervise the collection, receipt and custody of the funds and securities of the Society subject to the order of the Board or Executive Committee and the deposit of all funds of the Society with banks or trust companies approved by the Board or Executive Committee. He shall see that all bills and appropriations are paid as ordered by the Board or Executive Committee and checks shall be signed by such officers and agents as the Board or Executive Committee shall determine. The Treasurer shall supervise the keeping of regular and correct accounts and shall submit reports to the Society at its Annual Meeting, to the Board at all Regular Meetings and to the Executive Committee at each meeting. He shall be a member *ex officio* of the Executive Committee and of the Finance Committee. The books of account of the Society shall be open at all times to the inspection of the Trustees and the Executive, Finance and Auditing Committees. The fiscal year of the Society shall be the calendar year.

SEC. 5. The Secretary, unless otherwise ordered by the Board or Executive Committee, shall cause notices to be issued of all meetings of the Society, the Board and the Executive Committee, attend all such meetings and keep the minutes thereof. He shall affix and attest the seal of the Society to all contracts and instruments executed on behalf of the Society unless otherwise ordered by the Board or Executive Committee. He shall conduct the correspondence of the

Society, have custody of the seal, archives and books, other than books of account, and perform the usual duties pertaining to his office and such other duties as the Board or Executive Committee may direct. He shall be a member *ex officio* of the Executive Committee.

SEC. 6. The Board or the Executive Committee may appoint annually a Director of the New York Zoological Park. He shall devote his entire time to the affairs of the Society. Subject to the President, the Board and the Executive Committee, he shall be the executive officer of the Park; shall exercise general supervision of the Park and all activities there engaged in by the Society; shall be responsible generally for the performance by all employees at the Park of their respective duties and for the execution of all orders of the Board or Executive Committee and shall engage and discharge personnel, excepting officers, employed at the Park. He shall perform all such other duties in connection with the business, scientific and literary administration of the Society as may be assigned to him by the Board, the Executive Committee and the President. The Director need not be a Trustee.

SEC. 7. The Board or the Executive Committee may appoint annually a Comptroller. The Comptroller shall devote his entire time to the affairs of the Society except as otherwise ordered by the Board or the Executive Committee. He shall act as chief fiscal officer of the Society under the Treasurer; he shall have custody of and preserve all records and documents relating to the property of the Society, keep proper books of account, see that audits thereof are currently and regularly made, and in conjunction with other officers and officials, initiate and enforce measures and procedures whereby the business of the Society shall be conducted with the maximum efficiency and economy. He shall perform all such other duties in connection with the business, scientific and literary administration of the Society as may be assigned to him by the Board, the Executive Committee, the President and the Treasurer. The Comptroller need not be a Trustee.

SEC. 8. The Board or Executive Committee may appoint one or more Assistant Treasurers, Assistant Secretaries and such other officers or officials as may be deemed necessary, none of whom need be a Trustee, to serve at the pleasure of the Board or Executive Committee, and may define their respective duties. A bank or trust company organized under the laws of the State of New York and having its principal place of business in New York City may be appointed Assistant Treasurer and banks or trust companies organized under the laws of the United States or of the State of New York and having their principal place of business in New York City may be made custodians of the securities and investments of the Society upon such terms as may be specified and with such powers as may be delegated to them by the Board or Executive Committee.

ARTICLE VI • COMMITTEES

SECTION 1. *Executive Committee*—This Committee shall consist of eight Trustees, and the President, Treasurer and Secretary as members *ex officio*.

In the interim between meetings of the Board, the Executive Committee shall manage and control the property, business and affairs of the Society and exercise all the powers of the Board to the extent not delegated to other Committees or contrary to law. It shall report regularly to the Board, and send copies of its minutes and of reports made to it to each member of the Board.

Regular meetings of the Executive Committee shall be held on the third Tuesday in each month, unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman or at the written request of three members of the Committee delivered to the Secretary. Four members including the Chairman shall constitute a quorum, but all action shall be decided by a majority vote of the members present.

The Executive Committee shall appoint each year a Nominating Committee which shall hold office for one year and until its successors are appointed.

The Executive Committee shall fix the salaries of the officers and employees of the Society unless otherwise directed by this Committee or the Board.

SEC. 2. *Finance Committee*—This Committee shall consist of not less than three Trustees and the President and Treasurer as members *ex officio*.

Regular meetings of the Finance Committee shall be held quarterly unless otherwise ordered by the Chairman, at such time and place as shall be fixed by the Chairman. Special meetings may be called upon order of the Chairman on not less than three days' written or 24 hours' verbal notice.

The Finance Committee shall have power to sell securities and other investments belonging to the Society and to reinvest proceeds of sale and invest any other funds of the Society available for investment, in such securities or investments as it may deem wise. It shall report quarterly to the Executive Committee all purchases and sales of securities and investments made by it. It may submit to the Board or Executive Committee its recommendations with regard to sales or purchases of securities or other investments.

Notwithstanding the power hereby conferred, the Board or Executive Committee may, at any time, direct the sale of any securities and investments held by the Society, or direct the reinvestment of any proceeds of sale or investment of other funds of the Society available for investment in such securities or investments as it may specify.

Directions to any custodian or depository for the purchase or sale of securities or other investments or other action in connection therewith shall be given by the officers, members of the Finance Committee or such agents as the Board or Executive Committee may from time to time determine.

SEC. 3. *Auditing Committee*—This Committee shall consist of three members, other than members elected pursuant to Article I, Section 6, and the President and the Secretary as members *ex officio*.

The Auditing Committee shall cause the accounts and funds of the Society to be audited and certified annually, or as often as it deems advisable, by a certified public accountant of its selection and shall report to the Board on its examination of the report of the certified public accountant.

SEC. 4. *Nominating Committee*—This Committee shall be composed of three members other than Trustees and members elected pursuant to Article I, Section 6. This Committee shall select twelve candidates, to succeed the outgoing class of Trustees, to be voted upon at the ensuing annual meeting. The names of such candidates shall be posted in a conspicuous place in the office of the Society at least ten days before the annual meeting.

ARTICLE VII • AMENDMENTS

SECTION 1. These By-Laws may be amended, either by change or repeal of any provision or the adoption of new provisions, at any meeting of the Board by majority vote of the Trustees present, provided such proposed amendment is set forth in full in the notice of such meeting.



